LIPPINCOTT LIBRARY
APR 13 1960
GEOGRAPHY & INDUSTRY

EEI BULLETIN

• MARCH, 1960 •

EEI Prepares for 28th Annual Convention

A Cadet Program in Action

Russell Hicock

Illinois-Missouri Pool—Its Function, Organization and Operation

H. G. Goers

Accounting Conference Program

PUBLISHED BY EDISON ELECTRIC INSTITUTE

ELECTRIC UTILITY INDUSTRY Statistics IN THE UNITED STATES

for DECEMBER 1959

Current Statistical Data Covering 100 Percent of Industry

(Includes Investor-Owned Companies, Cooperatives, and Government-Owned Utilities)—December, 1959

	1959	1958	%
SOURCE AND DISPOSAL OF ENERGY			
NET GENERATION* (Kwhr in Thousands)			
By Fuel Burning Plants	50,427,457	48,458,394	+ 4.1
By Water Power Plants	12,683,269	10,752,610	+18.0
Total Generation	**63,110,726**	**59,211,004**	**+ 6.6**
Add—Net Imports over International Boundaries	370,950	274,556	+35.1
Less—Company Use	178,948	177,011	+ 1.1
Less—Energy Used by Producer	1,764,848	1,700,157	+ 3.8
Net Energy for Distribution	**61,537,880**	**57,608,392**	**+ 6.8**
Lost and Unaccounted for	6,881,400	7,270,985	− 5.4
Sales to Ultimate Customers	**54,656,480**	**50,337,407**	**+ 8.6**
CLASSIFICATION OF SALES			
NUMBER OF CUSTOMERS—As of December 31			
Residential or Domestic	48,968,412	47,788,587	+ 2.5
Rural (Distinct Rural Rates)	1,660,239	1,634,348	+ 1.6
Commercial or Industrial:			
Small Light and Power	6,362,907	6,281,076	+ 1.3
Large Light and Power	318,046	315,410	+ 0.8
Other Customers	195,157	189,070	+ 3.2
Total Ultimate Customers	**57,504,761**	**56,208,491**	**+ 2.3**
KILOWATT-HOUR SALES—During Month of December (Kwhr in Thousands)			
Residential or Domestic	15,889,181	14,419,531	+10.2
Rural (Distinct Rural Rates)	874,369	791,146	+10.5
Commercial or Industrial:			
Small Light and Power	9,432,236	8,564,322	+10.1
Large Light and Power	26,153,384	24,449,090	+ 7.0
Street and Highway Lighting	594,107	559,617	+ 6.2
Other Public Authorities	1,231,327	1,126,503	+ 9.3
Railroads and Railways	441,051	371,614	+18.7**
Interdepartmental	40,825	55,584	−26.6
Total to Ultimate Customers	**54,656,480**	**50,337,407**	**+ 8.6**
Revenue from Ultimate Customers (Thousands)	**$916,555**	**$848,962**	**+ 8.0**
RESIDENTIAL OR DOMESTIC SERVICE			
AVERAGE CUSTOMER DATA—for 12 months ended December 31, 1959			
Kilowatt-hours per Customer	3,585	3,366	+ 6.5
Average Annual Bill	$89.63	$85.16	+ 5.2
Revenue per Kilowatt-hour	2.50¢	2.53¢	− 1.2

* By courtesy of the Federal Power Commission.

** Due to increased kwhr sales to New York City Transit Authority.

Vol. 28 • No. 3

EEI BULLETIN Contents

March, 1960

Articles, Speeches, Reports

EEI Prepares for 28th Annual Convention in Atlantic City . 67
Second Edison Award Will Be Presented at EEI Convention 68
Atlantic City . . . EEI Convention City—Famous for Boardwalk, Sun and Sand 70
A Cadet Program in Action
Russell Hicock 74
The Illinois-Missouri Pool—Its Function, Organization and Operation
H. G. Goers 78
Southern California Edison Operates Sea Water Conversion Plant 81
Accounting Conference to Be Held April 25-27 in New York 82
Wisconsin Electric Power Donates Burn Center to Milwaukee Hospital 83
American Electric Power Announces a New Steam, Gas Turbine Project 85
Winners in Light for Living Contest 86
Live Better Electrically Round-Up 87
Prime Movers Committee Meeting
T. O. Thompson 88
Electrical System and Equipment Committee Meeting
R. G. Meyerand 90
Transmission and Distribution Committee Meeting
H. E. Cody 93

News, Notes, Miscellany

Conventions and Meetings 66
Texas Students Offered Atom Fellowships 77
Reddy Sponsors 21st Annual Report Contest 80
Arkansas P&L Stages Electric Heating Fair 80
Niagara Mohawk, Con Ed to Erect High-Voltage Lines 84
Utility Motor Vehicle Conference Scheduled May 9-12 94
People in Power 95
Committee on International Cooperation Formed by EEI .. 96
Lindseth Speech Cited by Freedoms Foundation 96

The EDISON ELECTRIC INSTITUTE BULLETIN is published monthly, except bi-monthly in July and August, by the Edison Electric Institute, an association of electric light and power companies in the United States and its territorial possessions. Its affiliate members consist of private electric utilities in North, Central and South America and contiguous islands in the Western Hemisphere.

The objectives of the Edison Electric Institute are:

The advancement in the public service of the art of producing, transmitting, and distributing electricity and the promotion of scientific research in such field.

The ascertainment and making available to the members and the public of factual information, data, and statistics relating to the electric industry.

To aid its operating company members to generate and sell electric energy at the lowest possible price commensurate with safe and adequate service, giving due regard to the interests of consumer, investor, and employee.

Closing date for the BULLETIN is the tenth of the month preceding the month of issue.

Manuscripts and correspondence relating to the BULLETIN should be addressed to the Editor, Edison Electric Institute, 750 Third Ave., New York 17, N. Y.

The Edison Electric Institute does not assume responsibility for, nor necessarily endorse or approve, statements made by contributors to the BULLETIN.

Subscription price of the BULLETIN is $3.00 per year in the United States; $4.00 per year in foreign countries. Second-class postage paid at Philadelphia, Pa. Publication office, 56th and Chestnut Sts., Philadelphia 39, Pa. Editorial office, 750 Third Ave., New York 17, N. Y.

CONVENTIONS AND MEETINGS

1960

MARCH

28-29 Pacific Coast Electrical Association Engineering and Operating Conference, San Francisco, Calif.
29 Public Utilities Association of the Virginias Rural Committee, Jackson's Mill, W. Va.
29-31 American Power Conference, Sherman Hotel, Chicago, Ill.
31 EEI Area Development Committee, EEI Headquarters, New York, N. Y.
31-Apr. 1 ASME Textile Engineering Conference, North Carolina State College, Raleigh, N. C.
Apr. 1 Pacific Coast Electrical Association Engineers & Operating Meeting, Hotel Claremont, Berkeley, Calif.
31-

APRIL

3- 8 AIEE Engineers Joint Council Nuclear Congress, New York, N. Y.
4 EEI Advertising Committee, Edgewater Beach Hotel, Chicago, Ill.
4 EEI Commercial Group Committees, Edgewater Beach Hotel, Chicago, Ill.
4 EEI Farm Development Committee, Edgewater Beach Hotel, Chicago, Ill.
4 EEI Farm Promotion Committee, Edgewater Beach Hotel, Chicago, Ill.
4 EEI Industrial Power & Heating Group, Edgewater Beach Hotel, Chicago, Ill.
4 EEI Market Research Committee, Edgewater Beach Hotel, Chicago, Ill.
4 EEI Residential Group Committees, Edgewater Beach Hotel, Chicago, Ill.
4 EEI Sales Personnel & Training Committee, Edgewater Beach Hotel, Chicago, Ill.
4- 6 EEI Annual Sales Conference, Edgewater Beach Hotel, Chicago, Ill.
6- 8 Northwest Public Power Association Annual Meeting, Eugene Hotel, Eugene, Ore.
7- 8 EEI Power Survey Committee Meeting, EEI Headquarters, New York, N. Y.
7- 8 ASME-SAM Management Engineering Conference, Statler Hilton Hotel, New York, N. Y.
7- 8 PEA Land & Land Rights Committee, Greensburg, Pa.
7- 8 Southeastern Electric Exchange Engineering & Operation Section Conference, Roosevelt Hotel, New Orleans, La.
11-12 Pacific Coast Electrical Association Administrative Services Conference, Huntington-Sheraton Hotel, Pasadena, Calif.
11-12 PEA Residential Committee, Altoona, Pa.
20-22 Missouri Valley Electric Association Engineering Conference, President Hotel, Kansas City, Mo.
21-22 EEI Industrial Relations Committee Joint with the New England Regional Utility Group, Somerset Hotel, Boston, Mass.
21-22 Illuminating Engineering Society South Central-Southeastern Regional Conference, Peabody Hotel, Memphis, Tenn.
21-22 Indiana Electric Association Young Men's Utility Conference, Fort Wayne, Ind.
24-26 Rocky Mountain Electrical League Annual Spring Conference, Harvest House, Boulder, Colo.
25-26 ASME Maintenance & Plant Engineering Conference, Chase-Park Plaza, St. Louis, Mo.
25-26 Illuminating Engineering Society Southwestern Regional Conference, Robert Driscoll Hotel, Corpus Christi, Texas
25-27 EEI Accident Prevention Committee, Desert Ranch, St. Petersburg, Fla.
25-27 EEI-AGA National Conference of Electric & Gas Utility Accountants, Hotels Commodore and Roosevelt, New York, N. Y.
25-28 EEI Hydraulic Power Committee, Benjamin Franklin Hotel, Philadelphia, Pa.
25-29 ASME Metals Engineering Division-AWS Conference, Biltmore Hotel, Los Angeles, Calif.
27-29 EEI Insurance Committee, Longfellow House, Pascagoula, Miss.
27-29 NELPA Annual Spring Conference, Hotel Florence, Missoula, Mont.
28-29 EEI Statistical Committee, New Orleans, La.
28-29 Illuminating Engineering Society Inter-Mountain Regional Conference, Mountain Shadows Hotel, Scotsdale, Ariz.
28-29 PEA Systems Operation Committee, Bedford Springs Hotel, Bedford, Pa.

MAY

1- 4 National Association of Electrical Distributors 52nd Annual Convention, Memorial Auditorium, Dallas, Texas
2- 3 PEA System Planning Committee, Skytop, Pa.
2- 4 EEI Prime Movers Committee, Hotel Monteleone, New Orleans, La.
2- 4 EEI Purchasing & Stores Committee Annual Meeting, The Warwick, Philadelphia, Pa.
3- 5 American Public Power Association Annual Meeting, The Shoreham Hotel, Washington, D. C.
4- 6 Illuminating Engineering Society South Pacific Coast Regional Conference, Ambassador Hotel, Los Angeles, Calif.
5- 6 Southeastern Electric Exchange Heat Pump Task Force Committee, King Edward Hotel, Beaumont, Texas
9-10 Illuminating Engineering Society Pacific Northwest Regional Conference, Benjamin Franklin Hotel, Seattle, Wash.
9-13 EEI-AGA 19th Annual Conference on Operation of Public Utility Motor Vehicles, Jung & Roosevelt Hotels, New Orleans, La.
10-12 AIEE Farm Electrification Conference, Sheraton-Fontenell Hotel, Omaha, Neb.
11 ECAP Copy Group Meeting, New York, N. Y.
11-12 New Jersey Utilities Association Semi-Annual Meeting, Seaview Country Club, Absecon, N. J.
12-13 EEI Transmission & Distribution Committee, Penn-Sheraton Hotel, Pittsburgh, Pa.
12-13 Illuminating Engineering Society Midwestern Regional Conference, Sheraton Martin Hotel, Sioux City, Iowa
12-13 PEA Industrial Sales Conference, Skytop Club, Skytop, Pa.
12-13 PUAA 39th Annual Convention, The Waldorf-Astoria, New York, N. Y.
15-17 Wisconsin Utilities Association Accounting Conference, Lake Lawn Lodge, Delavan, Wis.
16-17 EEI Electrical System & Equipment Committee, Baker Hotel, Dallas, Texas
16-17 Illuminating Engineering Society Great Lakes Regional Conference, Carter Hotel, Cleveland, Ohio
16-18 Pacific Coast Electrical Association Annual Convention, Stardust Hotel, Las Vegas, Nev.
17-18 National Safety Council Public Utilities Section Executive Committee, Sheraton-Fontenell Hotel, Omaha, Neb.
17-19 ASME Production Engineering Conference, Schroeder Hotel, Milwaukee, Wis.
19-20 Northwest Public Power Association Engineering & Operations Section Annual Meeting, Elks Lodge, Port Angeles, Wash.
19-20 PEA Relay Committee Spring Meeting, Fort Stanwix Hotel, Johnstown, Pa.
22-25 EEI Meter & Service Committee, Hotel Lorraine, Madison, Wis.
22-26 ASME Oil & Gas Power Conference & Exhibit Muehlebach Hotel, Kansas City, Mo.
23-25 NELPA Business Development Section, Chinook Hotel, Yakima, Wash.
23-26 ASME Design Engineering Conference & Show, Statler Hilton Hotel, New York, N. Y.

JUNE

6- 8 EEI Convention, Atlantic City, N. J.

EEI Prepares for 28th Annual Convention in Atlantic City

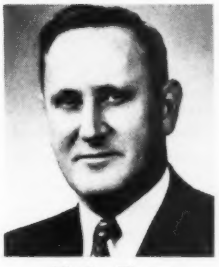
W. W. LYNCH
Chairman,
EEI Convention
Program Committee
(Other members at right)

J. F. DAVENPORT

C. E. EBLE

P. A. FLEGER

Institute to Meet in Atlantic City, N. J., June 6-8, at the Warren Theater. Theme, 'Leading the World in Electric Power—the American Way,' Reflects U. S. Global Position



M. L. KAPP

J. J. MCDONOUGH

REFLECTING the position of leadership occupied by the United States today in electric power supply, the 28th EEI Convention, to be held in Atlantic City, N. J., June 6-8, will have the significant theme, "Leading the World in Electric Power—the American Way."

The Program Committee, under the Chairmanship of W. W. Lynch, President of Texas Power & Light Co., is planning a program of major importance to the electric industry. It will cover in constructive and challenging presentations a wide range of subjects vital to the electric companies as they prepare to serve the electrical needs of the future in an atmosphere of free enterprise.

Serving on the Program Committee with Mr. Lynch are: J. F. Davenport, Executive Vice President of Southern California Edison Co.; C. E. Eble, President of Consolidated Edison Co. of New York, Inc.; P. A. Fleger, Chairman and President of Duquesne Light Co.; M. L. Kapp, President of Interstate Power Co., and J. J. McDonough, President of Georgia Power Co.

In the useful and informative program arranged by the Committee, nationally recognized authorities in allied and interested fields will join electric company

(Continued on page 69)

Second Edison Award Will Be Presented at EEI Convention

FIVE investor-owned electric utility companies have been nominated for The Edison Award, the industry's highest honor, which will be presented for the second time at the 28th EEI Convention in Atlantic City, N. J., June 8.

The Edison Award is presented annually to an electric company "for distinguished contribution to the development of the electric light and power industry for the convenience of the public and the benefit of all." This Award was established last year, replacing the Charles A. Coffin Award which was given annually from 1922 through 1957, honoring outstanding industry achievement.

Consisting of a gold medal for the winning company and $1000 for the company's employees' fund, the Award has acquired national prominence in the public mind, as well as in the electric industry, for its significance in recognizing conscientious service and progressive development. The Award is made for accomplishments during the preceding year.

The Review Committee for The Edison Award selected these companies from the entries as finalists to receive citations and to be invited to submit presentations for the final award:

Commonwealth Edison Co.
The Detroit Edison Co.
Duke Power Co.
The United Illuminating Co.
Western Massachusetts Electric Co.

(Continued at top of following page)

EEI Convention Schedule

Atlantic City, N. J.—June 6-8, 1960

Sunday, June 5

1 p.m. to 6 p.m.—Registration in lobby of Traymore Hotel

Monday, June 6

8:30 a.m. to 12 Noon—Registration in lobby of Traymore Hotel

12 Noon to 5 p.m.—Registration at Warren Theater

2:30 p.m.—First General Session in Warren Theater

5 p.m. to 7 p.m.—President's Reception in Carolina Room, Chalfonte Hotel

Tuesday, June 7

8:30 a.m. to 5 p.m.—Registration at Warren Theater

9:30 a.m.—Second General Session in Warren Theater

12 Noon—Ladies' Luncheon at Claridge Hotel and Entertainment at Roxy Theater

2:30 p.m.—Third General Session at Warren Theater

Wednesday, June 8

8:30 a.m. to 3 p.m.—Registration at Warren Theater

9:30 a.m.—Fourth General Session at Warren Theater

2:30 p.m.—Fifth General Session at Warren Theater

8:30 p.m.—Presentation of The Edison Award, followed by special entertainment through the courtesy of Westinghouse Electric Corp., at Warren Theater

(*Continued from preceding page*)

The Review Committee based its selection of the five nominees on the following citations:

Commonwealth Edison Co.—For its enlightened, significant contribution toward development of economic nuclear power by its intensive efforts culminating in achievement of critical operation of Dresden Nuclear Power Station, the country's initial full-scale reactor plant completely financed by private enterprise; for accomplishing the objective within time and cost estimates; for outstanding efforts in construction of low-cost residential electric space heating.

The Detroit Edison Co.—For outstanding business statesmanship in promoting civic responsibility among its employees through the sponsorship and development of its "Applied Citizenship Committee"; for providing the necessary training facilities for developing an informed electorate; and for encouraging employee participation in political and community activities; all leading to the preservation of the traditional American free enterprise system.

Duke Power Co.—For completion of engineering planning of the Catawba River Development, involving 13 hydroelectric plants and five steam plants; and for carrying forward an outstanding employee training and management development program, together with a notably effective effort to achieve improved customer and public relations.

The United Illuminating Co.—For outstanding leadership in promoting large-scale urban redevelopment in New Haven, Conn.; and for fostering active participation of its executives on civic committees and in urban development programs in its service territory.

Western Massachusetts Electric Co.—For research and promotion in developing successful application of electric space heating to commercial buildings in cold climates; for furthering experimental heat storage systems to implement such installations including one in the company systems headquarters building; for instituting promotional rates for such service; and for continuing aggressive development in the residential space heating field.

EEI Prepares for 28th Annual Convention

(*Continued from page* 67)

leaders as speakers at the five General Sessions. Speakers will include:

Allen S. King, EEI President and President, Northern States Power Co.; W. T. Lucking, President, Arizona Public Service Co.; R. G. MacDonald, Vice President, Marketing, West Penn Power Co.; T. G. Ayers, Vice President, Commonwealth Edison Co.; Dr. F. J. L. Blasingame, Executive Vice President, American Medical Association; Frank Pace, Jr., Chairman, General Dynamics Corp.

Also, P. A. Fleger, Chairman and President, Duquesne Light Co., and Chairman, EEI General Division Executive Committee; J. F. Fairman, Senior Vice President, Engineering and Rates, Consolidated Edison Co. of New York, Inc., and Chairman, EEI Technical Appraisal Task Force on Nuclear Power; C. E. Oakes, Chairman, Pennsylvania Power & Light Co., and Chairman, EEI Policy Committee on Power and Pooling, and Chairman, Executive Committee, EEI Customer, Employee and Investor Relations Division.

Also, H. H. Scaff, Vice President, Management Consulting Division, Ebasco Services, Inc., who will moderate a panel of speakers including G. T. Conklin, Jr., Senior Vice President, The Guardian Life Insurance Co. of America; G. M. Ives, Vice President, Morgan Guaranty Trust Co. of New York; F. W. Page, Vice President, Tri-Continental Corp., and H. H. Young, Limited Partner, Eastman Dillon Union Securities & Co.; Dr. D. S. Russell, former President, University of South Carolina; J. T. Wolfe, President, Baltimore Gas and Electric Co.; and G. R. Conover, Vice President, Personnel and Public Relations, Philadelphia Electric Co.

The Institute has met in Atlantic City more times than in any other city in the nation. An unusually large attendance is expected this year.

Registration facilities will be set up in the lobby of the Traymore Hotel, located on Atlantic City's famous boardwalk, from 1 to 6 p.m., on Sunday, June 5, to accommodate those who plan to arrive in the convention city early. Delegates may also register there from 8:30 a.m. to 12 noon on June 6. Subsequently, the facilities will be located at the Warren Theater. Registration hours at the Warren will be as follows: Monday, 12 noon to 5 p.m.; Tuesday, 8:30 a.m. to 5 p.m.; Wednesday, 8:30 a.m to 3 p.m.

The first general session of the convention will be held at 2:30 p.m. on Monday. On Tuesday and Wednesday, sessions will be held at 9:30 a.m. and at 2:30 p.m.

The second annual presentation of The Edison Award will be made at 8:30 p.m., Wednesday, at the Warren Theater. This presentation will precede a program of entertainment to be provided through the courtesy of the Westinghouse Electric Corp. This musical program will be highlighted by Philadelphia's famous Robin Hood Dell Orchestra, conducted by Alfred Wallenstein.

The President's Reception will be held in the Carolina Room of the Chalfonte Hotel from 5 to 7 p.m., Monday.

The Ladies' Luncheon has been scheduled for noon Tuesday at the Claridge Hotel, to be followed by a program of entertainment at the Roxy Theater.

The registration fee of $15 covers admission to all business sessions and social functions. Identification for admission to these events will be badges for gentlemen and pins for ladies, both obtainable only upon registration.

Official application blanks for hotel reservations may be obtained from Edison Electric Institute, 750 Third Ave., New York 17, N. Y.

Reservation applications and inquiries concerning housing should be directed to Atlantic City Housing Bureau, 16 Central Pier, Atlantic City, N. J.

Atlantic City...

On hot summer days, the miles of beach at Atlantic City are jammed in front of Traymore Hotel.

EEI Convention City—

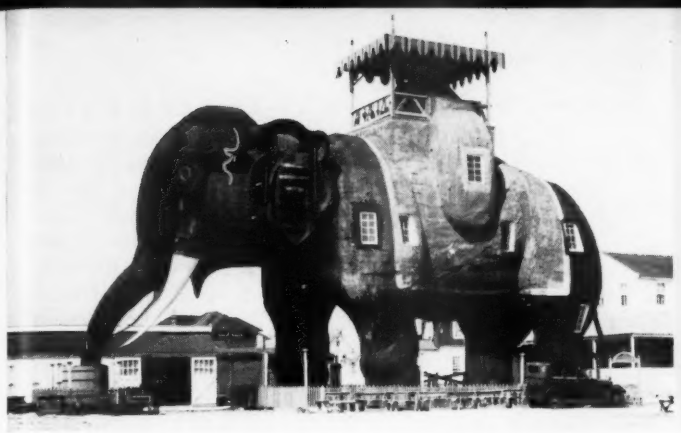
Famous for Boardwalk, Sun and Sand

ATLANTIC CITY, which has been the scene of 11 EEI annual conventions, again will be the host city to the Institute when it meets for its 28th Convention, June 6-8, at the Warren Theater.

The Institute first met in this New Jersey resort city in 1934, one year after EEI had been organized. It last met there in 1956.

Atlantic City probably is best known for its fabulous

The Claridge Hotel, right, is the tallest building in Atlantic City. The Marlborough-Blenheim Hotel is also shown. The Marlborough is in the center and the Blenheim is at left. These hotels, where many of the EEI Convention delegates will stay, June 6-8, front along the boardwalk. All are near the Warren Theater.



"Elephant Hotel" in Margate, near Atlantic City, is the only pachyderm hotel in the United States.

boardwalk, which stretches along the Atlantic Ocean for a length of several hundred city blocks. The boardwalk has been praised in song, in the theater and has formed the backdrop for many opulent Technicolor musicals in Hollywood.

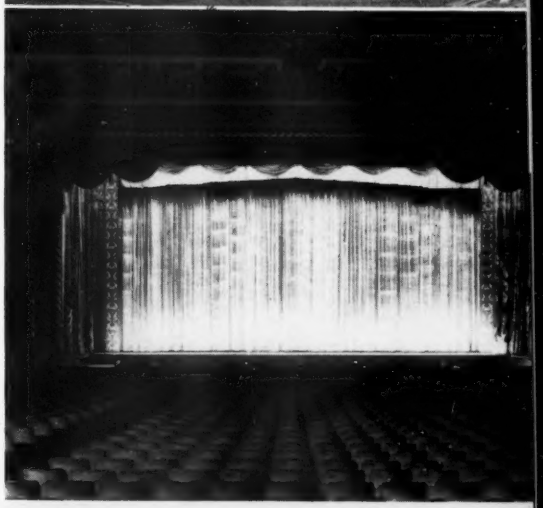
But there is more to this world-famous resort city than the boardwalk. There are sun and sand, hotels with architecture out of "Arabian Nights," Convention Hall, rolling chairs, the Miss America Pageant, Million Dollar and Steel Piers, cool ocean waters lapping against the shore, jitneys scurrying up and down Pacific Avenue, excellent seafood restaurants, and a permanent population of 68,000 which spends most of the year making millions of guests feel at home.

AC Electric Franchised in 1886

Atlantic City also has figured prominently in the history of the electric industry. The Atlantic City Electric Co. on April 18, 1886—just four years after the Pearl St. Station in New York went into operation—received its franchise from Thomas A. Edison. Atlantic City was selected as the site for Light's Golden Jubilee celebration in 1929. The first convention in Convention Hall, which was completed that same year, was held by the electric power industry. Here, on June 6, 1929, Mr. Edison spoke for the last time to the industry to which he contributed so much.

And in 1954, Atlantic City was chosen as the site for the commemoration of Light's Diamond Jubilee.

From one of the pioneeer investor-owned electric companies in the nation, Atlantic City Electric Co., which will be the host company of the EEI Convention, has become one of the important electric utilities in America. It now operates in eight counties, covering



EEI Convention will be held in Warren Theater, on the boardwalk. Traymore Hotel is in background.

The Steel Pier, left, is one of the many attractions in Atlantic City. Top entertainers perform here.

The Atlantic City Golf Course is located a short distance from the resort's downtown hotels and motels.

Bicycling is permitted on the boardwalk every day between 6 a.m. and 9 a.m. Bicycles are rented by hotels.

At mid-day visitors throng to Million Dollar Pier to see the fish haul brought up from the floor of the ocean

one-third of the state, and serves 240,000 customers. Bayard L. England, Chairman of the company, has been extremely active in EEI activities for many years and served as President of the Institute in 1952-53.

Each year the lure of this summer playground and convention mecca attracts some 15,000,000 visitors to the gates of Atlantic City, located on Absecon Island, on the New Jersey shore, two-and-one-half hours from New York.

City Planned for Guests

Atlantic City is one of the few cities in America planned for the convenience of its guests. Its population has a universal reputation for hospitality—to the conventioneer, or the secretary from Montreal, or the New Yorker spending a weekend in the sun with his family. It is a city that has been catering to vacationers since 1854 when the first train unloaded passengers at the three hotels which had sprung up at that time.

In 1870 one of Atlantic City's hotel proprietors complained to city officials that because the city had cleared away sand dunes, ocean tides swept over the land adjacent to his hotel, often stranding his guests. So, on the petition of the proprietor and a railroad conductor, Atlantic City gave the world its first boardwalk —for the convenience of guests. It was eight feet wide, one mile long, and one foot off the ground.

Unpretentious as it was, this boardwalk increased the popularity of the city as a summer resort. Several boardwalks were destroyed or damaged by storms and tides until the fourth one was constructed in 1890. In 1944, this final boardwalk was damaged by the elements, but recently was completely repaired after a long wait for the right kind of lumber.

To keep Atlantic City's most familiar symbol in repair, a crew of specially trained carpenters is kept busy 365 days a year. The maintenance cost runs as high as $100,000 a year.

Atlantic City actually is two cities in one. There is

The wicker rolling chair is an Atlantic City institution. Also popular are newer electrically powered chairs.

the world of the boardwalk with its hundreds of shops and places of entertainment, where, at any hour of the night will be found a handful of merrymakers unwilling to "call it a day" and return to hotel or guest house. Beyond the boardwalk are the vast avenues—Pacific and Atlantic—and the permanent city of nearly 70,000 people.

Convention Hall, the world's largest auditorium (it can seat the entire permanent population of the city), is one of the most famous landmarks in Atlantic City. It is equally well known to television audiences in America and newspaper readers throughout the world as the scene of the annual Miss America Pageant. The building covers seven acres of ground.

Most visitors to Atlantic City are impressed by its magnificent hotels. The resort offers about 27,000 hotel rooms and an estimated 12,000 rooms in rooming houses or tourist cottages. Seventeen of the most palatial hotels are situated on the beachfront and present an impressive skyline. The Chalfonte-Haddon Hall, with 1000 rooms, is said to be the largest resort hotel in the world. The tallest hotel in Atlantic City is the Claridge which towers 18 stories above the boardwalk.

Domes, Minarets, Flower Beds

Each of the hotels is of a design and type of construction all its own. No two are alike. One may feature a huge dome like a castle in Baghdad, another a tall minaret, while a third gives prominence to a court of colorful flower beds. All boardwalk hotels have sundecks that look out over the ocean.

In Greater Atlantic City and Absecon Island, there are three other municipalities—Ventnor, Margate and Longport—each with attractive ocean drive vistas, a collection of summer homes and permanent residents.

Places to see in the center of Atlantic City include the All-Wars Memorial Building, the Public Library, the Atlantic City Hospital, Columbus Park, The World War I Memorial at Albany Ave. Circle, and the Post Office.

Another famous landmark—in nearby Margate—is the Elephant Hotel. "Lucy" is celebrating her 78th birthday this year. She is the sole survivor of several erected in 1882 by a builder who intended to put up a string of these huge tin pachyderms in resorts all over the nation. The body of the elephant is 38 feet long and 80 feet in circumference. The legs are 22 feet high, 10 feet wide and weigh a ton each. Spiral stairways take visitors into the body and up to the howdah.

Rolling Chairs Electrically Powered

No trip to Atlantic City would be complete without a leisurely ride along the boardwalk in one of the rolling chairs. These chairs are an original resort creation dating back to the 1880's. However, in addition to the original wicker wagon pushed by an attendant, a motorized blue chair which is powered by electricity has been added.

On Pacific Avenue, one block north of the boardwalk, the familiar "jitneys"—small buses seating 10 passengers—carry visitors from one end of the city to the other.

Once a hybrid collection of large private motor cars with extra seats added, the jitney bus has kept pace with the growth of the resort. The jitney got its name from "jitt," slang for a nickel, the price of a ride in the early days of this type of transportation. Today visitors may ride the entire length of Atlantic City for 15 cents in the miniature jitney buses.

For those who have spare time, there is golf on four excellent courses, horseback riding on the beach, bicycling on the boardwalk (from 6 a. m. to 9 a. m.) and other daytime diversions. There is plenty to do in the evening hours. The city has a large number of first-run movies, fine restaurants, night clubs and hotel grilles.

Many sites of interest to visitors are found within 25 to 50 miles of Atlantic City. Within easy driving is the beautiful Atlantic City Race Course, one of the most modern racing plants in the country. Colorful Renault winery plant is located in nearby Egg Harbor. Between Vineland and Bridgeton is Parvin State Park. Its 100-acre

(*Continued on page* 85)

The Atlantic City skyline, seen at night from the Atlantic Ocean, presents a blaze of lights and reflections.

A Cadet Program in Action

By Russell Hicock
Operating Superintendent,
The Connecticut Light & Power Co.

THE Connecticut Light & Power Co. is a combination electric and gas operating company, serving an area of some 3,300 square miles and about 420,000 customers.

The company is a conventional staff and line organization with company headquarters and staff located centrally at Berlin, Conn. It has five operating divisions, 12 operating districts, three steam generating plants and one hydro division.

Total employees of the company number slightly over 3100. About 475 are classified as management or supervisory; approximately 220 of this supervisory group are in the foreman category and the remaining 255 are administrative, professional and executive. Foremen and their replacements are normally promoted from the ranks.

The cadet program is aimed at providing for replacement and growth in the administrative, professional and executive group.

Program Established in 1955

The present cadet program was established in 1955 as a part of the company's planned management-development effort. Actually, the program as then established involved no startling or fundamental change from past practices. The memorandum announcing the establishment of the program stated, "Traditionally it has been the company practice to develop qualified personnel for positions of professional and administrative responsibility by means of progressive training given at power stations, in the district organization and on the staff. The attached instruction letter states company policy concerning training of cadet personnel. While certain procedural changes have been incorporated, the attached instructions are essentially a formalized implementation of a policy which has been informally followed for many years."

Adoption of the formalized cadet program in 1955 was brought about by several considerations or pressures.

- The slump in new hires during the depression and World War II resulted in a requirement for more rapid development of qualified professional and administrative talent.
- At that particular time the competition for graduate engineers was extremely keen, and it was felt that a well defined formalized cadet training program might serve as effective recruitment attraction.
- We had reached a situation in management-union relations which made it necessary and desirable to establish clearly the precise status of the cadet or graduate engineer as a trainee in the company organization.
- We had arrived at a point in our consideration of future management requirements where we recognized and appreciated the desirability of crystallizing our objectives into written form for all to see and understand.

Now, just what is our cadet program? It is represented by five documents—a policy directive and four training schedules. These schedules are written for different functions and training periods as follows:

Sales Engineering	78 weeks
Accounting	80 "
Gas Engineering	100 "
Electric Engineering	104 "

The cadet engineer training schedule is the most comprehensive. It affects the greatest number of trainees and it is the one with which I am most familiar.

Specifically, the purposes of the program are:

- To provide for the systematic selection of cadets for positions of ultimate professional and administrative responsibility.
- To provide for the orderly training and progressive development of such personnel.
- To provide for the supervision of these cadets during training.

Operation of the Program

The basic procedures essential to the operation of the program are determined by the vice president, public and employee relations, and the vice president in charge of the department for which the cadet is being trained. Responsibility for the overall administration and coordination of this program is vested in the training section of the public and employee relations department, acting in concert with appropriate staff and line personnel.

The quota for hires into the program is based on an annual forecast of the company's requirements in the foreseeable future.

The responsibililty for selection and assignment of personnel to the training program is vested in the department for which they are being trained, acting in cooperation with the public and employee relations department.

Sources for selection in order of preference are regular employees, college graduates with company experience

Presented before the Fall Meeting of the Employee Relations Committee of the Electric Council of New England, Boston, and also before the 31st Meeting of the EEI Transmission and Distribution Committee, St. Petersburg, Fla., Jan. 21, 1960.

as temporary employees or college graduates recruited for the program.

Regular employees must be under 35 years of age and qualify with an appropriate bachelor of arts degree (engineering or accounting major), or an appropriate associate degree, plus four years company experience, or an equivalent combination of practical experience and academic training.

Other than regular employees must be under 30 years of age and qualify with an appropriate bachelor degree from a recognized college or university.

The employee relations department is responsible for arranging recruitment visits, for conducting preliminary interviews and for the administration of any tests which may be deemed necessary.

The training program normally begins on July 1 of each year, or as close thereto as is conveniently possible. As training assignments are completed, the cadet moves to the next step in his program. The responsibility for insuring that these changes in work assignments are made on schedule is vested in the employee training section of the public and employee relations department.

The principal emphasis in the program is placed on learning rather than producing. It is not intended that the cadet will acquire and apply trade skills of workmen, chiefs and foremen. Cadets are not used to replace helpers, classified workmen, chiefs or foremen, nor are they assigned in any capacity which will prevent the hiring of such employees or delay their advancement from lower classifications.

Cadets 'Get Feel' of Operation

While cadets do a certain amount of productive work in order to "get the feel" of a given operation, they perform this work as additional members of a regularly constituted working unit. Periods of assignment to any type of work activity are temporary in nature as set forth in the training schedule.

Cadets do not function as supervisors; they are encouraged to participate in appropriate educational courses off the job; they are included in staff supervisory meetings.

Although general responsibility for the coordination of the cadet's training is the responsibility of the employee relations department with the advice and assistance of the department for which the cadet is being trained, direct responsibility for supervision of training is delegated to the manager, plant superintendent, or department head in the area in which the cadet is assigned.

A cadet appraisal report is used to rate all cadets periodically during the program. Appraisals are made jointly by the supervisor(s) immediately in charge of his training, and the manager or superintendent. Each rating is thoroughly discussed with the cadet by the manager, superintendent or department head.

In the event that the performance of any cadet is not satisfactory, the employee relations department will immediately inaugurate a thorough examination of the circumstances.

As each principal unit of the job training program nears completion, the cadet is required to make out a written report covering the work of the plant, district, or department in which he has been training. This written report is based upon his observations and is intended to be expository in nature, rather than a critique of the program.

Mr. Hicock discusses the cadet program of The Connecticut Light & Power Co., adopted in 1955. Since then, 25 cadets have entered the program. Of these, 13 completed the training, and six are still in training.

Mr. Hicock believes that a utility program such as this should be an integral part of the company management-development plan.

He also lists three ways in which he believes this program can be improved.

As each principal unit in the training program is completed, the cadet is interviewed by the vice president in charge of the department for which he is being trained. In advance of the interview, the department head reviews the progress reports made on the cadet, as well as the written reports which the cadet has submitted. He is thus prepared to discuss the progress of the cadet and to test his understanding of the training which he has completed.

The purpose of the reports and the interviews are to keep the cadet aware that his progress is being followed closely, to provide the department head with an opportunity to become better acquainted with the cadet during the early stages of his training and to provide an opportunity for the appraisal and counseling when required.

Following is a résumé of the cadet engineer training schedule:

Orientation (program), two days; power plant, 30 weeks; district, 31 weeks; Berlin, 42 weeks; elapsed training time, 103 weeks; vacation, one week; total time of program, 104 weeks.

Power Plant—30 Weeks

Plant orientation and yard operations, two weeks; steam and electric operations, eight weeks; plant test and instrumentation, eight weeks; mechanical and electrical maintenance, 12 weeks.

District—31 Weeks

Orientation (district) two days; electric operations, eight weeks; gas operations, four weeks; combined operations, 14 weeks (meter—customer service—field engineers); accounting—sales—stores, five weeks.

Berlin—42 Weeks

Test department, 24 weeks; general construction department, five weeks; engineering and operating staff, 10 weeks; other headquarters staff, three weeks.

Following are excerpts from the training schedule to indicate the detailed instructions and helpful information included. Both training supervisors and cadets are furnished copies of this schedule.

Excerpts from The Connecticut Light & Power Co.'s Training Schedule

Cadet engineer's report based on experience gained in generating station becomes due one week prior to completion of power plant training assignment. At completion of this assignment and before moving on to next step in training program, interview with engineering and operating department personnel at Berlin will be arranged.

Mechanical Maintenance and Electrical Maintenance

12 weeks.

Purpose—To become familiar with upkeep and repair of plant equipment.

Method of Training—Assigned to assistant plant superintendent to be reassigned to joint supervision of mechanical and electrical foremen with understanding that each foreman will use cadet as the training opportunities available indicate. During this period cadet should work on:

1. Maintenance of pulverizing mills, exhausters, pumps and steam piping.
2. Overhaul of motors, oil circuit breakers, switches and electrical testing.
3. Operation of machine tools and machine shop work.

In addition to the publications mentioned opposite, the cadet should have reference to:

1. Abbott's National Electric Code Handbook Rev. 7th Edition.
2. Circular Letter No. 7.
3. Accounting Department Circular Letter No. 3
4. Gas Engineer's Handbook.
5. CL&P Specifications for Underground Gas Distribution System.

District Gas and Electric Engineers and Estimators

9 weeks, 3 days.

Purpose—To gain a general familiarity with the work done and the problems encountered by the engineers and estimators. Should become familiar with the codes, company rules and regulations and dockets to which we must conform. Should become generally familiar with work done in distribution office. Should be provided with copies of "Requirements for Electric Service" and have reference to Engineering Standards, National Electric Safety Code, and PUC Dockets, National Electric Code.

Method of Training—Assigned to district electric engineer who will rotate the cadet through various training jobs.

In introducing the program in our company, we realized the necessity that it be accepted wholeheartedly by company personnel if it was to achieve its purpose. Although we had active participation of district, plant, and staff management in the preparation of the program and the training schedule, we wished to insure that all our supervisors and managers supported the program and understood the importance of the training effort it required of them. We also wished to be very sure that cadets in the new program would not take on the aura of "crown princes," particularly in the minds of those of our graduate engineers who had been trained in the predecessor "on-the-job" training program.

To accomplish this objective, the training director and the operating superintendent conducted group meetings in every district and plant, contacting everyone in the supervisory group to explain the administration of the new program, to emphasize the supervisors' training role and to allay suspicions that the newly formalized program would place previous engineering trainees at a disadvantage.

Selling Campaign Successful

We believe this selling campaign was quite successful. A very common comment was, "I wish I had had this opportunity when I came with the company."

Naturally, acceptance of the program by the cadets themselves was also essential to its success. Although generally favorable, the attitude of prospective candidates for the program is not entirely uniform. The younger candidates usually are highly pleased about the program, whereas older candidates, generally those who have completed their college training on the G.I. Bill, are less enthusiastic. They appear more anxious to get to work rather than to spend more time in schooling. I think it is fair to say that practically all cadets get a little "itchy" for a productive job before they have completed the program. Nonetheless, all graduates of the program to date consider the training experience was predominantly worthwhile. However, almost universally, the cadets express a desire for greater work participation and productive assignment during their training period.

Moving Causes Mixed Feelings

One feature of the program regarded with mixed emotion by the cadets is the necessity to move from one location to another to complete all three phases of the training.

We have been reasonably successful in assigning the cadet graduates, whom we classify as junior engineers, in accordance with their preference. To date, there have been only two instances where we have assigned a cadet to a location or activity not entirely to his liking.

The original cadet program schedule for engineers was for 30 months. The current program runs for 24 months. In the minds of some of our managers and some of the cadet graduates, the period is still too long. One criticism is that the program is too evenly balanced. By preselecting the area of future assignment, it would be possible to reduce materially the length of time spent in one of the two field locations, either the district or generating plant.

Another criticism is that a two-year training period without productive work makes the program too expen-

sive in both money and time. As a matter of fact, the original 30-month period of the program appeared initially to be quite costly, because during this period all graduate engineers hired were on training assignment and not available for normal work assignment. However, we did reap what has turned out to be a very beneficial side effect from this 30-month moratorium on increased engineering man-power. In order to get the day-to-day engineering and estimating done, it was necessary to utilize technically trained personnel promoted from the ranks. Consequently, we are now able to operate satisfactorily with a much lower ratio of graduate engineers.

We try to make our application of the cadet training program as flexible as possible. Shortly after inauguration of the program in 1955, two former employees (graduate engineers) returned from military leaves. We gave them credit for their prior training, picked them as cadets and let them graduate somewhat ahead of direct hires into the program. We also had two graduate engineers at about the midpoint of their "on-the-job" training program. These we also gave credit for their training thus far accomplished and put them into the cadet program. From time to time we hire graduate engineers who have had summer experience working for the company. Whenever this work experience has been of a suitable nature, it is credited against time in the cadet training program. Thus, without any sacrifice of effective training, we have been able to adapt the program to meet the specialized requirements or situations of individual employees.

Problem: Graduate Engineer Handling

We have one area of inflexibility, however, which poses a problem not yet solved—how to handle graduate engineers who come to us with a few years experience and expect a rate of pay somewhat above that provided for in the cadet program. If we employ such a graduate engineer, give him a special assignment and classification, and a rate of pay higher than that of the cadet, we automatically leapfrog those cadets who have come into the program and violate our basic policy of hiring at the bottom and promoting from within. It is easy to see that this can cause some resentment and dissatisfaction among the cadets. However, if we refuse to hire any graduate engineers except those who can start in our cadet training program, we may find that we are passing up some high-caliber material which the company really needs in its management-development plan.

In the four-and-a-half years since the program was inaugurated in 1955, 25 candidates have entered the program. Of these, 13 have completed the program, three have resigned, three have transferred to other assignments and six are in training. Of these six, three have had a delay of six to 10 months to complete their military service obligations.

I believe our program can be further improved. First, it should be possible to shorten the program by giving it a bias in the direction of anticipated assignment to production, or transmission and distribution.

Second, I believe we can do better forecasting of the placement of the cadet upon his completion of the program and reclassification as a junior engineer. By doing this, we should be able to have his final cadet assignment in the same location as his initial assignment as a junior engineer. In this way, we can avoid at least one move on the part of the cadet and can also be assured that the cadet starts his real professional career with the company in a location where he is known and his abilities are recognized.

Third, I believe it should be possible to improve training methods to increase the amount of productive work accomplished to fulfill the desire of the cadets for some challenging assignments during their period of training.

Based on an evaluation of our experience, I believe that for a utility such as ours, a cadet training program should be an integral part of the company management-development plan.

'Keep Pace Electrically' Planning Guide Available

AN illustrated planning guide which tells about the electrical industry's new concept, "Keep Pace Electrically," is available from the National Wiring Bureau. This theme was developed by the bureau to help all branches of the industry benefit from increased sales through a unified appeal to prospects in the commercial market. Already, more than 40 manufacturers have indicated that they plan to tie the emblem and theme into their own advertising and promotional efforts.

A complimentary copy of "A New Sales Approach to the Commercial Market," may be ordered from Commercial Promotion Department, National Wiring Bureau, 155 East 44th St., New York 17. Additional copies may be purchased at 25 cents each. Publication number is PB-104.

Texas Students Offered Atom Fellowships

SIX research fellowships in atomic energy for graduate students in Texas colleges and universities will be awarded this summer by the Texas Atomic Energy Research Foundation and the General Atomic Division of General Dynamics Corp., it was announced today by J. E. Cunningham, President of the foundation.

The foundation is composed of 11 investor-owned electric utility companies operating in Texas.

The recipients of the six research fellowships will work under the direction of General Atomic scientists on the controlled nuclear fusion research program being jointly sponsored by General Atomic and the Texas Atomic Energy Research Foundation at the John Jay Hopkins Laboratory for Pure and Applied Science at San Diego, Calif.

The Illinois-Missouri Pool—
Its Function, Organization and Operation

By H. G. Goers

Assistant Manager, Electric Operations,
Illinois Power Co.

THE fundamental purpose for creating the Illinois-Missouri Pool was to obtain the substantial economic rewards resulting from the sharing of reserve capacity, the installation of larger generating units and the coordinated, interconnected operation of the members.

While these factors alone would undoubtedly have prompted the formation of the pool, there was another factor which generated considerable pressure to form the pool in 1952. This factor had to do with the Atomic Energy Commission's decision to locate its plant near Paducah, Ky., if a suitable power supply could be obtained in this area.

Out of this background, then, was born a new utility company, Electric Energy, Inc. It was formed by five companies—the three Illinois-Missouri Pool members, Kentucky Utilities, and Middle South Utilities.

Since AEC needed start-up power in fair-sized amounts long before a power plant could be built, the so-called Northern sponsors of Electric Energy, Inc.—Central Illinois Public Service Co., Illinois Power Co., and Union Electric Co.—agreed to pool their resources to supply interim power to the AEC. The Northern sponsors decided to interconnect their respective systems with a 230-kv transmission line to Electric Energy, Inc. This line, in addition to supplying interim power for AEC, would also supply back-up power to Electric Energy, Inc., as well as carry surplus power from Joppa to the sponsors. This was a good incentive for the formation of the pool.

The Illinois-Missouri Pool was organized in 1952, with Central Illinois Public Service Co., Illinois Power Co. and Union Electric Co. as members. The pool members own 80 percent of Electric Energy, Inc.

A committee of operating men was appointed by the principal officers of the three companies to draft an operating agreement for the pool.

The basic concepts which were considered in drawing up the agreement were:

- That it be equitable.
- That it contain incentives for:
  1. Efficient and economical operating practices.
  2. Cooperative action.
- That it contain no incentives for:
  1. Unethical procedures.
- That the pooling be established on a cooperative basis.

The "one-system concept" thus became the basis for drawing up the cooperative type of pool agreement.

Under the terms of the pool agreement, each member company retained complete autonomy. There is no central pool coordinator. All members are bound together by a pact in which each agreed to cooperate fully with the other members for the benefit of the pool as a whole.

Each member makes available for the supply of power to the pool all of its generating facilities and such of its transmission, substation and other facilities as are required for interconnected operation. Each member operates its facilities on an interconnected and coordinated basis, retains ownership and directs operation of its own system and the facilities within its system.

Pool Operating Committee

The agreement provides for the establishment of a Pool Operating Committee. This committee meets quarterly to review the load and capacity situation. It makes recommendations to the members on capacity requirements to meet anticipated load growth. The committee also establishes operating and maintenance schedules, control and operating procedures and principles of interchange accounting. In addition, it performs such other duties or exercises such other authority as may be provided in the agreement or as may be conferred upon it by mutual agreement of the members.

The performance of the Operating Committee is subject to review by the member companies. Any matter upon which the committee is unable to agree is referred to the chief executives of the member companies.

Each member is responsible for his load, plus his

share of the total reserve capacity in the pool. The member which has more generating capacity than his responsibility is compensated by the party or parties who have less than their responsible share.

The energy associated with the kilowatts paid for as capacity deficit is contract energy. A member who has a capacity deficit is entitled to ask for and to receive contract energy.

The most common type of energy exchanged is economy energy. The savings are split under an arrangement in which the price for economy energy is the average of the incremental cost of the supplier and the decremental cost of the purchaser.

The pool is well interconnected both internally and externally. Union Electric Co. and Kansas City Power & Light Co. are connected with a 161-kv line. Another 161-kv line connects Illinois Power Co. and Iowa-Illinois Gas and Electric Co. Commonwealth Edison Co. and Illinois Power Co. are connected through three 138-kv lines and Central Illinois Light Co. and Illinois Power Co. interconnect over three 138-kv lines and one 69-kv line. A 230-kv line from St. Louis to Joppa, by way of West Frankfort, ties the pool with Electric Energy, Inc. From this point, six 161-kv lines interconnect with the TVA and Kentucky Utilities via the AEC load bus.

The pool members also have interconnection agreements with neighboring utilities which provide for interchange of emergency, economy and firm power and for regulation within the large interconnection.

Union Electric is "Banker"

Union Electric Co. acts as the "banker" for the pool and for Electric Energy, Inc., with respect to unscheduled flows of energy over interconnection. Central Illinois Public Service Co. and Illinois Power Co. balance their unintentional accounts with Union Electric Co. each month. This is accomplished either by repayment in kind or at the rate of four mills per kilowatt-hour.

Regulating energy between this pool and Southwest Power Pool is summarized monthly and reported on a cumulative basis. Union Electric Co. handles all correction of unintentional energy for the pool.

Interchange metering is provided at all interconnection points between the respective pool members and on all external pool tie lines. A full complement of automatic load-frequency control equipment, together with necessary high-speed, telemetering channels, helps each system control its generation in accordance with its load demands.

Each of the three pool members has an extensive microwave communication system. These are also interconnected to form a very flexible communication loop between the dispatch offices. The microwave system is also used to send control and telemetering signals.

The planned capacity additions are timed so that the pool reserve ratio will not be less than 10 percent. In 1952, when the pool was formed, each of the members had a unit scheduled for 1953 and 1954. Illinois Power Co. also had a unit scheduled for 1955. These units ranged in size from 75 mw to 125 mw.

Scheduling of units planned beyond 1955 was changed as a result of coordinated planning with an estimated joint saving of more than $7 million in fixed charges on investment. The actual savings were probably greater than this because the pool was subsequently able to defer further the units.

Since 1958, there have been one 265-mw unit and one 225-mw unit installed. A 200-mw unit is scheduled for June of this year, and a 315-mw unit for June, 1961. No additional capacity is planned for 1962. Union Electric Co. plans to make a pumped storage hydro installation of approximately 350-mw in 1963. Plans are still open beyond 1963.

Double-Size Units Installed

As a result of pooling, each of the members is installing units which are about twice as large as those they would have otherwise installed. This means a savings of a lower initial investment cost per kilowatt of installed capacity. The better efficiency of the larger units gives a lower production cost.

By agreement, the system with the lowest estimated reserve ratio is obligated to add additional capacity.

Because of scheduled maintenance outages, emergency outages and the natural errors which exist in forecasting loads three to four years in advance, it has been found through experience that a reserve ratio of approximately 15 percent of load is appropriate for the pool. If the load does not develop as rapidly as forecast, the 15 percent reserve may be exceeded when new capacity comes on the line. By the same token, if the load grows faster than forecast the reserve will be closer to 10 than 15 percent.

Experience indicates that with about 45 major units it is not unusual to have several machines off at the same time for unscheduled maintenance work. There have been numerous occasions when the reserve of nearly 15 percent was welcome.

A coordinated maintenance schedule is prepared annually. The schedule aims to maintain a pool reserve of at least 10 percent based on estimated demands for each overhaul period. If the schedule cannot be met because of unforeseen difficulties, it is revised by mutual agreement. No difficulties have been encountered on dove-tailing the maintenance work. If the reserve is adequate, lengthy emergency outages are also allowed as scheduled outages. The "one-system concept" and trying to observe the principle of the Golden Rule—treat your neighbor as you would like to be treated—help to create a harmonious atmosphere in which to work out problems.

Spinning Reserve Power

Since the pool was formed, it has attempted to carry sufficient reserve to cover the loss of the largest machine. Before the pool was interconnected with neighboring systems this proved to be a good policy.

Recently this matter has been studied with a view towards taking advantage of adequate tie lines and spinning reserve available under reciprocal agreements with pool neighbors. The following policy with regard to spinning reserve was recently agreed upon:

- The pool will attempt to effect some reduction in the amount of spinning reserve which is normally carried. This will be accomplished by relying on interconnected ties with neighboring systems where a reciprocal letter agreement can be obtained.
- The maximum amount of spinning reserve capacity

obtained from external systems shall not exceed one half of the pool's largest single liability.

The reduction in spinning reserve will be watched very carefully to make sure too little reserve is not being maintained. The pool probably will not go much, if any, below 5 percent of peak load in order to allow for some error in daily load forecasts.

Within the pool, economy energy is exchanged whenever there is a difference of one mill or more between two parties. Illinois Power Co. exchanges economy with some of its neighboring non-pool member systems on a four-tenths mill or greater differential. The basic philosophy in dealing with economy energy, within or external to the pool, is that the transaction which provides the largest saving to the pool as a whole is the best deal.

Illinois Power Co. is tentatively planning to develop a new mine-mouth plant site in Southern Illinois in 1964 or 1965. A 300-mw unit is being considered. Fuel costs will be low.

Based on experience over the past seven years it looks as if more joint planning of future generation location and system development may offer even greater economies. Some of the factors which make joint planning advantageous are:

- Abundance of low cost coal in Southern Illinois.
- Increasing size of single generating units within the Illinois-Missouri Pool.
- The need for extra-high-voltage transmission system within the pool and heavier interconnections with neighboring systems.
- Power displacement through interconnections as a result of normal operations of other systems and emergencies.

It is felt that the pool has accomplished all of the things hoped for at the time of its formation. Capital expenditures for generating capacity have been deferred. The savings from the use of larger generators are being realized. Additional savings have been made possible by economy energy transactions. Quality of service rendered has been improved. Voltage and frequency fluctuations due to loss of generating units have been lessened.

Through the medium of pooling and interconnected operation, substantial gains have been made in slowing down the increasing costs of electric service.

Reddy Sponsors 21st Annual Report Contest

THE 21st Reddy Kilowatt Annual Report competition will continue through May 6, Ashton B. Collins, President of Reddy Kilowatt, Inc., has announced.

The objective of the award is to encourage companies to "simplify, dramatize and humanize" their annual reports in order to create greater stockholder interest and understanding of the company's operation.

The competition is open to any business-managed electric or combination electric and gas company. To enter the competition, a company has only to send seven copies of its 1959 annual report to Reddy Kilowatt, Inc., 750 Third Ave., New York 17, N. Y., so they will be received before May 6.

A handsome bronze plaque will be given to the winner of the Top Award. Certificates of Award will be presented to the winner in each of the following classifications: companies having 400,000 or more customers; those having 200,000 to 400,000; those having 100,000 to 200,000, and those having up to 100,000 customers. Honorable mention certificates will be awarded to three companies in each of the classifications.

Judges are J. C. Bevis, President, Opinion Research Corp.; J. F. Childs, Vice-President, Irving Trust Co.; Frederick W. Page, President, Tri-Continental Financial Corp., and Warren W. Shew, Publisher, *Electrical World* magazine.

Arkansas P&L Stages Electric Heating Fair

AN Electric Heating Fair, the first of its kind in Arkansas, is being held in Little Rock.

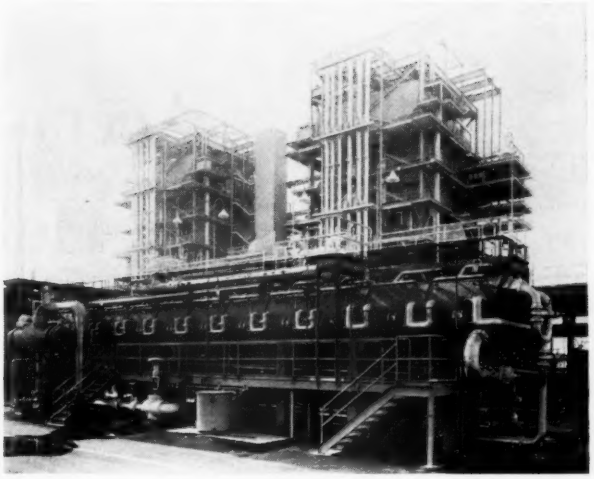
Focal point of the fair is a display of electric heating equipment on exhibit in the lobby of Arkansas Power & Light Co.'s Little Rock office building. The display, which includes heat pumps, portable and built-in resistance heating equipment and insulation exhibits, will remain open through March 31.

W. M. Shepherd, AP&L Vice President, said the fair is being held in cooperation with manufacturers and distributors of electric heating equipment.

"We hope the general public will take advantage of this opportunity to get the full story about electric home heating," Mr. Shepherd said.

The display is said to be the most complete assemblage of electric heating ever gathered under one roof in Arkansas. Constant inquiries about electric heating from people throughout the state prompted the company to get together with manufacturers and distributors to stage an educational fair of this type.

Mr. Shepherd noted that interest in electric heating is evidenced by the fact that the number of electric heating installations on AP&L lines last year were double those of 1958, and will double again in 1960—a 100 percent gain each year.



The first of its kind in the nation to be used in conjunction with a steam electric station, this sea water converter, above, was put into operation by Southern California Edison Co. early this year. It is located on Mandalay Beach.

The first official taste of Pacific Ocean water, freshened by Southern California Edison's sea water converter is presented, left, to SCE Vice President W. L. Chadwick by Merlene Wilson.

Research and Development—

Southern California Edison Operates Sea Water Conversion Plant

THE first general purpose sea water conversion plant on the Pacific Coast has been put into operation by Southern California Edison Co. at its steam electric plant on Mandalay Beach near Oxnard, Calif.

World-wide interest has been expressed in this project, not only because it employs a new distillation principle, but also because it will be the subject of an intensive three-year research program.

Equipment for this demonstration plant was furnished by Cleaver-Brooks Special Products, Inc., Waukesha, Wis. Jacobs Engineering Co., Pasadena, was the consulting engineering firm for the utility. The cost of the unit and installation was in excess of $250,000.

Southern California Edison officials said the unit will be utilized to search for a more economical method of extracting potable water from the sea by distillation. This plant, they said, is the first of its kind in the country to be used in conjunction with an existing steam electric generation station.

Experience and data derived from experiments with this pilot plant are expected to provide technical and cost information leading to the eventual construction of saline water plants with capacities of 5 to 10 million gallons a day of potable water.

"However, we are talking about the future," said W. L. Chadwick, SCE Vice President, "and it should be emphasized that this is a pilot, experimental plant; one that cannot be expected to produce water at a cost competitive in any way to present Southern California sources such as the Colorado River."

Although the company's saline water converter is comparatively small, with a total daily output of 100,000 gallons, it has excited interest because of the opportunities it affords for use of waste and lower grade heat.

"It utilizes steam which has nearly passed through the station's turbine and is extracted for use in the evaporator plant," Mr. Chadwick said. "As a result, it is relatively inexpensive heat. Its design incorporates an un-

(*Continued on page* 86)

Accounting Conference to Be Held April 25-27 in New York

THE 1960 National Conference of Electric and Gas Utility Accountants will be held April 25-27 in New York City at the Commodore and Roosevelt Hotels.

The conference will be sponsored by the EEI Accounting Division and the American Gas Association's Accounting Section. The individual committees have developed a comprehensive program of vital interest and importance to accounting people of both industries.

P. R. Lawson, Comptroller, Pennsylvania Electric Co., is Chairman of the EEI Accounting Division Executive Committee, and C. H. Mann, Treasurer, Columbia Gas System Service Corporation, is Chairman of the AGA Accounting Section Managing Committee.

A general session will be held in the Commodore on Monday morning, April 25. An address of welcome will be made by Harland C. Forbes, Chairman of the Board, Consolidated Edison Co. of New York, Inc., and greetings extended by representatives of both associations. Following this, there will be a presentation by James K. Polk, Chairman of the Committee on Depreciation and Amortization of the American Bar Association's Section of Taxation, on "Depreciation and Replacement." Dr. Nicholas Nyaradi, former Minister of Finance of Hungary, and now Director, Institute of International Studies, Bradley University, will discuss "Free Enterprise or Disaster."

Committee and Joint Sessions

The various committee and joint activities sessions will continue from the afternoon of April 25 to noon, April 27, with the Customer Activities Group meeting in the Commodore Hotel and the General Activities Group holding its sessions in the Roosevelt Hotel.

The General Activities program will include papers and discussions on technological and economic depreciation, forecasting techniques and methods, use of property records in connection with work measurement and cost controls, and dividends out of capital. The potential use of electronic machine equipment in general accounting activities will be emphasized in discussions of the application of depreciation calculations on high-speed computers, payroll applications on electronic accounting machines, and a description of a system designed to permit conversion of plant accounting and property records operations to machines with a minimum of confusion and lost motion.

A panel on price level depreciation and another on internal auditing problems and questions have been planned. Other discussions will be devoted to office procedures, case studies of responsibility accounting and reports, a review of procedures used for accounting for stores expense, and major revisions in the uniform system of accounts. Such other matters as liberalized depreciation developments, new accounting developments, and coordinating management services will help round out a program covering much of the accounting field.

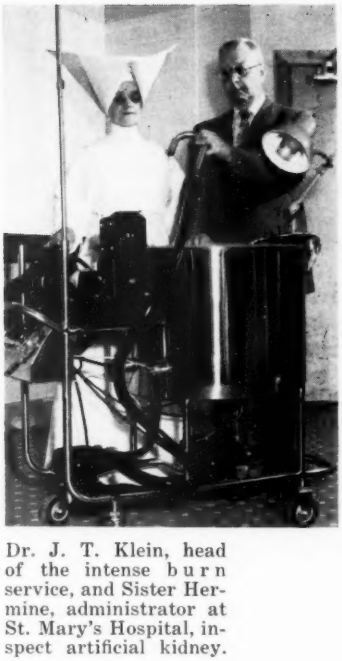
One joint session of the Customer Activities Group will include discussion of accounting of customers' deposits, company participation in accounting customer relations, and a film produced by a member company, showing the developments in modernized electronic accounting. The use and effectiveness of collection notices, the latest look at accounting customer relations, and a discussion of the rendition of final bills will highlight the other joint session, together with a report of the Methods and Procedures Committees. Customer reaction to appliance service charges, welcoming and greeting new customers, and an educational film on customer relations will feature subjects at the individual sessions of the Customer Activities Group.

What's new in customer accounting and billing, improving productivity of meter readers, training of customer accounting employees, and a display of sample service bill forms will be some of the subjects covered in individual customer accounting sessions. A summary of collection practices relating to collection activities, area classification of accounts, a summarization of the credit picture for the previous year—with comparisons—and surety deposits, will be among the customer collection subjects discussed.

The Accounting Employee Relations Committee's session will include talks on "College Education Is a Must," "Communications and the Supervisor," and "The Future Implications of Electronic Data Processing." In another session, this group will repeat the popular panel discussion on accounting employee relations problems.

The conference will sponsor business machines exhibits in conjunction with its program. Eight well-known companies will exhibit their products, which will be of particular interest to accounting personnel.

Wisconsin Electric Power Donates Burn Center to Milwaukee Hospital



Dr. J. T. Klein, head of the intense burn service, and Sister Hermine, administrator at St. Mary's Hospital, inspect artificial kidney.

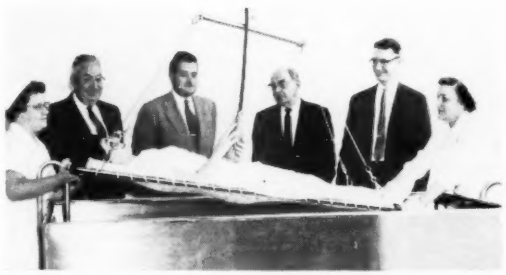
A BURN therapy center, the first of its kind in the Midwest and the fourth in the United States, has been contributed to St. Mary's Hospital in Milwaukee by the Wisconsin Electric Power Co.

The burn therapy center is an intensive care unit devoted to one particular injury. The highly specialized nature of burn injury treatment necessitated the appointment of a staff burn team.

Features of Center

The center includes the following features:

- An air purifying system which will deliver air as close to sterile as possible into the unit. This area is "sealed off" from the general hospital and there is a slight positive pressure created in the unit from the outside or hospital corridors. Such air purifying is essential to further practice of the "open" method of burn care.
- A large stainless steel tank in which patients are immersed for the purpose of cleansing burn areas and removing dressings. An electric hoist, running in a ceiling track, brings patients from beds to the tank and lowers them to the depth required. A whirlpool unit is mounted in the tank.
- Four special beds which allow the patients to be turned from front to back without painful and harmful handling.
- An artificial kidney to assist in those cases in which kidney shutdown follows the burn injury.
- A treatment and dressing area in which all care can be given without removing the patient from the burn unit.
- A mechanical respirator which aids breathing and is used particularly in cases of chest injuries, in cases of lung damage resulting from inhaling hot fumes and in certain other conditions involving respiratory difficulties.



Stainless steel tank into which burn patients are lowered for removing dressing and cleansing burn areas is inspected by Wisconsin Electric Power Co. employees, from left, E. A. Cockrell, T. J. Cassidy, Vice President F. L. Larkin and W. F. Harms.

Free Consultation for Burn Cases

All burn cases admitted to the hospital will be seen in free consultation by a member of the burn team. As a result of this action, the patient will be admitted to the department of intensive burn service—if the injury is severe—or to general surgical service where the general surgical member of the medical burn team will coordinate the care given the patient.

Dr. J. T. Klein, who was formerly in charge of

Two nurses at St. Mary's Hospital demonstrate one of four special beds which allow patients to be turned from back to front without any painful or harmful handling. The beds, themselves, can be moved between rooms of the hospital.

Wisconsin Electric Power's medical department, heads the hospital's new department of intensive burn service. He guided the development of the burn center as a result of his long experience with burn cases.

Dr. Volney Hyslop, well-known Milwaukee plastic surgeon, is associate director of the center. The burn center team includes medical practitioners in such specialties as general surgery, plastic surgery, orthopedic surgery, pediatric surgery, internal medicine and pathology.

A nursing burn team, drawn from St. Mary's nursing staff, was set up and received special training from the medical team. Miss Rosemarie Mathea is the head nurse of the burn center nursing team.

As the only burn center in the Midwest, the St. Mary's unit expects to receive patients from all over Wisconsin and neighboring states.

Dr. Klein, Dr. A. A. Presti, Secretary of the Staff, and Dr. D. H. Witte, Chief of Staff, St. Mary's Hospital, signed the following letter of appreciation addressed to G. W. Van Derzee, Chairman of the Board of Wisconsin Electric Power.

"The Saint Mary's staff wishes to express sincere appreciation to the Wisconsin Electric Power Co. for making possible the physical being of a burn center. We are proud in knowing that this center is one of four in the country and will serve this area with the latest and best facilities known to medical science. This center in our community will give life and hope to many who come under such therapy. It will be like a dynamo giving light where darkness prevailed in the past. A new era of treatment is realized and many burned patients will have the opportunity to live and become whole again.

"Your contribution has made this possible. We will be forever grateful for your generosity to the hospital and mankind."

Niagara Mohawk, Con Ed to Erect High-Voltage Lines

NIAGARA Mohawk Power Corp. and Consolidated Edison Co. of New York, Inc. soon will start construction of a 345,000-volt overhead transmission system from Utica to New York City.

The new lines will make possible the exchange of four times as much power as can now be interchanged between the Upstate and Metropolitan New York systems.

The joint project was announced by Earle J. Machold, President of Niagara Mohawk, and Charles E. Eble, President of Consolidated Edison. It will cost an estimated $35,000,000 and should be completed in 1962.

Through the new interconnection, an abundance of generating capacity in one area can be used economically to supply electricity to the other. The maximum demands for power in the New York City area now occur in the summer months while in Upstate New York power requirements are highest in the winter.

The new lines, with the 138,000-volt interconnections which have been in service since 1932, will provide an interchange capacity between the two systems of 800,000 kilowatts. They will enable the companies to provide each other with emergency aid on a large scale.

The expanded link between Niagara Mohawk and Consolidated Edison will consist of a 345,000-volt line from Utica to the Albany area and two 345,000-volt lines from Albany to Yonkers. The 80-mile section between Utica and Albany will be in addition to two 230,000-volt lines which Niagara Mohawk now has under construction, as well as existing 115,000-volt lines between those points.

This heating and wiring information center has been opened next door to its main office building in Rochester, N. Y., by Rochester Gas and Electric Corp. The object of the center is to dispense advice, information and help to solve either heating or wiring problems. Heating equipment or wiring devices are not sold. A section of the center shows various types of electric heating units that are available.

American Electric Power Announces a New Steam, Gas Turbine Project

A GENERATING cycle combining a steam turbine and a gas turbine, to be installed in an Ohio power plant, will be used for the first time in the production of electric energy by a coal-burning plant.

This will be accomplished by installation of a 5,000-kw prototype turbine, driven by coal gas, at the Muskingum River Plant of the Ohio Power Co. at Beverly, Ohio. The gas turbine will be built adjacent to, and will operate in a combined cycle with, one of the plant's existing 215,000-kw steam turbines.

Joint Announcement

The decision to proceed with the installation was announced jointly by Philip Sporn, President of American Electric Power Co. and of Ohio Power, its subsidiary operating company, and by William S. Ginn, Vice President and General Manager, Turbine Division, General Electric Co.

It is expected that the gas turbine will be completed and in operation by the Spring of 1961.

Objective of the combination cycle is added efficiency of generation and, in later full-scale application of this cycle, an improvement of 4 percent in over-all efficiency is expected to be achieved.

The new gas turbine unit not only will generate an additional block of 5,000 kw of electric power on its own, but it will also supply combustible by-products to the steam boiler. This will reduce the amount of coal required by the boiler to feed the 215,000-kw steam turbine.

Previously, the use of gas turbines in power production has been limited and they have burned only natural gas, and distillate and bunker C oils. The Muskingum River installation will mark the first time that coal gas will have been used.

Because the installation is experimental in some respects, only a portion of the gas turbine capacity which could be used in combination with a steam turbine as large as 215,000 kw will be employed. It is anticipated, however, that successful operation of the unit will lead to gas turbine-steam turbine combinations in which the gas turbine capacity will be a much greater part of the total and in which much larger gas turbines than any designed and built to date might be utilized.

Operation of Prototype

The 5,000-kw prototype will operate in this manner: Coal for the gas turbine, broken down by high temperature in a carbonizer, will yield both gas and char. The gas will be burned in the gas turbine. The hot exhaust from the gas turbine will join the other in a cyclone-type burner firing into the pulverized coal-fired boiler. The char will burn and supply a portion of the steam generated for the steam turbine.

In their joint announcement, Mr. Sporn and Mr. Ginn stressed that this project is but another step in a long series of cooperative developments by the two organizations going back more than 40 years and having as its aim the advancement of the technology and the economics of large-scale generation of power.

Publications Available on Insulating Materials

THE 1959 compilation of "Standards on Electrical Insulating Materials (D-9)" has been published by the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

This edition contains 108 standards of which 46 are new, revised, or have had their status changed since the previous edition in 1957. Among the topics covered are: insulating shellac and varnish; effects of radiation; plates, sheets, tubes, rods and molded materials; electrical tests; mica products; plastics for electrical insulation, rubber tape and electrical protective equipment; and general test methods.

The publication has 792 pages. The price is $8.75

Another publication available from ASTM is the "Standards on Electrical Insulating Liquids and Gases (D-27)." It is priced at $4.25.

The Convention City

(*Continued from page 73*)

lake is a favorite with anglers. Here visitors will find a bathing beach, boats and canoes for rent, camp sites, picnic areas and cabins.

Express bus service is provided between Atlantic City and New York and Philadelphia. Frequent buses also run between Washington and Atlantic City. There are also direct airplane flights to the resort from many cities. Atlantic Seaboard Airlines recently inaugurated daily flights between Philadelphia and Atlantic City's Bader Field, located within the city limits and just five minutes by taxi from the major hotels. Trains are scheduled daily from New York and Philadelphia.

For those who prefer to drive, there is a direct route from New York via the New Jersey Turnpike and the scenic Garden State Parkway, one of the most beautiful highways in the nation.

WINNERS in LIGHT FOR LIVING CONTEST

FOUR housewives from four different areas of the United States were awarded individually designed all-electric homes for their families as the grand prize winners of the $100,000 Light-for-Living Medallion Homes Contest sponsored by EEI. The prizes went to consumers who best expressed the reasons they would like to occupy a total electric home.

In addition, four second-prize winners from similar geographical areas of the country have been awarded complete electric kitchens. Other prizes included 500 portable lamps and 500 packages of assorted light bulbs.

Some of the women who entered the contest expressed a desire to live electrically so they could save time, enter more into the activities of their families, have a career outside their home and gain time to continue their education.

Nearly 100,000 entries were received in the contest, which was open to any residential user of electricity in the continental United States or Hawaii, except employees (and their immediate families) of electric light and power companies, electrical leagues and associations, their advertising and contest agencies.

The four homemakers who won the $20,000 total electric Gold Medallion homes were informed of their selection by the presidents of their local electric utilities, which will help to coordinate the building of the homes for winners within the next four months.

EEI sponsored the contest to illustrate the importance of proper lighting in the home and the most effective time-saving features of electric living in wiring, use of electric appliances and electric heating and cooling that may be utilized in middle income housing.

The prize winning homes were specially designed for the area in which they are to be built through another open competition held by the Institute last year to acquaint student architects with the potential of design possible in homes featuring electric living.

First prize winners, and their electric utility companies, are:

Northeast, Mrs. Louis I. Sweet, Pawtucket, R. I., Blackstone Valley Gas & Electric Co.; Southeast, Mrs. Sue S. Sanders, Fairfield, Ala., Alabama Power Co.; Northwest, Mrs. Robert D. Milloy, Seattle, Wash., Puget Sound Power & Light Co.; Southwest, Mrs. F. G. Taylor, Dallas, Texas, Dallas Power & Light Co.

Second prize winners, and their electric utility companies are:

Northeast, Mrs. Gretchen Jensen, Lewiston, N. Y., Niagara Mohawk Power Corp.; Northwest, Mrs. Joseph Keely, Portland, Ore., Portland General Electric Co.; Southeast, Mrs. F. M. Fischer, St. Louis, Mo., Union Electric Co.; Southwest, Mrs. Georgia Johanson, San Angelo, Texas, West Texas Utilities Co.

Medallion Home Ad Run

The first 1960 Medallion Home ad appeared in the March 14 issue of *Life* magazine. The ad combines a unique art treatment showing the positive aspects of total electric living with strong, competitive copy. The theme and copy lines from this ad are especially suited to local promotion of the Medallion Home idea.

Additional reprints of this ad are available from EEI at 15¢ per copy. Please address orders to A. P. Howell, EEI, 750 Third Ave., New York 17, N. Y.

Conversion Plant

(*Continued from page* 81)

usual amount of operating flexibility. This will allow us to operate it in a number of different ways for our experimental purposes."

The converter is the most advanced equipment yet produced by Cleaver-Brooks, a company that has been building evaporators for commercial clients and the armed forces for several years. It is a multi-stage flash evaporator which takes advantage of water's changing boiling point when pressure is varied.

This type evaporator, according to Cleaver-Brooks officials, has several advantages, including substantially scale-free operation, simplicity of operation, use of relatively low level heat sources, and favorable initial cost.

Judges in the EEI Second Annual Student Architect contest look over entries. From left are: Carl Norcross, *House & Home* magazine; Jan Reynolds, Sylvania Electric Products, Inc.; R. W. Clemens, Houston Builders Association; N. L. Raab, Union Electric Co.; Dr. Ralph Johnson, National Association of Home Builders, and seated, H. H. York, architectural advisor. At the extreme right is Walter Wolverton, Federal Housing Administration consultant in the contest.

AP Story Quotes George on House Heating; Medallions Increase in Southern California

THE efforts being made by the electric utilities to get a bigger share of the house-heating market was the subject of a recent Associated Press story carried in hundreds of daily newspapers throughout the nation.

Written by Sam Dawson, AP business news analyst, the article cited remarks by E. O. George, Vice President, The Detroit Edison Co., and Chairman, Executive Committee of the EEI Sales Division.

It was pointed out that the cost of electricity has been a major factor in holding back this form of heating in most areas. Mr. George said the need for quality construction in homes was another important factor. To be economical, he added, electric heating systems require effective insulation and tight structure. He said that architects and builders are aware of this now, and are giving attention to these details.

Mr. George cited these figures: for a 20 by 30 bungalow, with basement, in an area where electricity costs 2 cents per kilowatt-hour, the heating bill might be $480 a year without insulation. Mineral wool insulation in the ceiling would cut this to $280 a year. Add insulation under the floor and in the walls and the cost comes to $180. With storm windows also, it could drop to $136, according to his figuring.

Spectacular increases in the award of Gold Medallions to new homes and apartments in Southern California has earned this area in 1959 continued national leadership for the Medallion Home award program.

The award of Gold Medallions for all-electric excellence to home and apartment builders in that area increased 331 percent over the record with which Southern California Edison led the nation in 1958, T. M. McDaniel Jr., Vice President of the company, has announced.

Bronze Medallion awards also hit a record high in the utility's service territory during the past year. These are presented as symbols of electrical excellence in homes which meet standards of the national Medallion Home Program. The gold insignias are the highest given by participating electric utilities. Gold and Bronze

(*Continued on page* 89)

Prime Movers Committee Meeting

- *Three Research Projects Approved*
- *Prime Movers Liaison Work*
- *Power Station Data Subcommittee Report*

T. O. THOMPSON
Chairman

THE first meeting of the Prime Movers Committee's Golden Anniversary Year was held in Cleveland, Ohio, Feb. 1-3, at the Sheraton-Cleveland Hotel.

This was the Committee's 99th meeting and the fourth visit to The Cleveland Electric Illuminating Co. service area since Prime Movers was organized as an EEI group. The meeting was attended by 103 members and guests.

Agenda Extended

The customary three-day agenda occasioned an extension to the usual meeting program to allow a supplementary inspection trip to the Eastlake Station coal pipe line terminal on the Sunday preceding the scheduled Monday session.

On convening on Feb. 1, the committee was welcomed to Cleveland by E. L. Lindseth, President of the host company. Mr. Lindseth, whose early electric utility experience was in the power station end of the business, referred to the many technical improvements in the science of generating electricity that have developed from the activities of the Prime Movers Committee. This has resulted, he pointed out, in an increasing reliance by the industry on the skill and effort of this technical group.

Mr. Lindseth's remarks were followed by introductory comments by the chairman. The Committee's membership, Mr. Thompson noted, has increased slightly over the past year and now stands at 100.

Since the October, 1959, meeting H. L. Johnson, Superintendent of Production, Kentucky Utilities, Inc., has been appointed to membership. Continued interest of past members in the Prime Movers Committee is gratifying and at this session a special welcome was extended to D. H. Vogel, formerly of the Columbus & Southern Ohio Electric Co.; J. F. McLaughlin, Iowa Power & Light Co., and T. T. Frankenberg, American Electric Power Service Corp., who has served on the committee in past years.

In reviewing the committee's Executive Group early morning meeting, Chairman Thompson reported that upon recommendation of the Prime Movers Committee and endorsement of the Research Projects Committee, three research programs had been approved by the EEI Board since the last Prime Movers Committee meeting. An authorization was granted for the engagement of a consultant to conduct a survey and prepare a report on the various water pollution factors which affect electric generating stations. A contribution for 1960 was also approved to assist in the financing of certain research projects of interest to the Prime Movers Committee, under the sponsorship of the Welding Research Council of the Engineering Foundation.

Direct Conversion Survey

A third program authorized by the Board is being sponsored jointly by the Prime Movers Committee and the Electrical System & Equipment Committee. This program involves a survey of the status of work in conjunction with direct energy to electricity conversion systems. The objective of this study, which will take approximately a year, is to evaluate the potential of each direct conversion method for the bulk production of electricity. The results of the project are expected to provide the basis for a possible future program or plan of action by the Institute in this field. The program is under way with Theodore Baumeister, Professor of Mechanical Engineering, Columbia University, and Consulting Engineer, being engaged to conduct the work under the direction of an EEI Steering Committee. This committee, composed of members of the two sponsoring groups, has as its chairman J. G. Miller, who with R. A. Baker, represents the Prime Movers Committee. W. B. Fisk and A. H. Kidder are the Electrical System & Equipment Committee representatives.

In addition to approving three new research activities, the EEI Board authorized a contribution for 1960 to the Corrosion Research Council of the Engineering Foundation. On recommendation of the Prime Movers Committee, EEI has contributed to the council on several previous occasions. The CRC research programs are followed closely by the Prime Movers Committee Metallurgy & Piping Task Force and the Corrosion Section of the Power Station Chemistry Subcommittee.

In the interest of cooperating in areas of mutual interest with other EEI groups, Prime Movers Committee representatives from time to time attend meetings of other committees. J. B. Taylor reported on the Accident Prevention Committee's meeting in Atlantic City, Nov. 8-11. The subject of accident prevention is carried as a continuing item on the agenda of several Prime Movers Subcommittees.

Another liaison report was submitted by G. P. Wilson, who with J. D. Williamson represents the Prime Movers Committee on the System Planning Subcommittee of the Electrical System & Equipment Committee. Mr. Wilson's report detailed the Subcommittee's Jan. 14-15 meeting. In addition to their liaison capacities, Messrs. Wilson and Williamson have been assigned to System Planning Subcommittee project groups in areas related to steam power generation.

Miller Maintains Liaison

The Prime Movers Committee maintains liaison with the Institute's Research Projects Committee through J. G. Miller. Mr. Miller, with liaison representatives from other EEI engineering committees and divisions, provides an organizational channel through which proposed research programs can be submitted by the Research Projects Committee for evaluation, and projects recommended by the specialized EEI groups can be transmitted to the research group. A number of project recommendations forwarded to the Prime Movers Committee from the Research Projects Committee are being considered at

the present time by the appropriate Prime Movers subgroups.

Subcommittee and project reports were initiated by W. C. Beattie, Chairman of the Air Pollution Subcommittee. Mr. Beattie reported on activities of a number of technical organizations concerned with the control of atmospheric contamination. Mr. Beattie also advised that his subcommittee is considering a proposed research project on the measurement and evaluation of stack plumes.

R. A. Baker, Chairman of the Boilers & Combustion Subcommittees, reported that in cooperation with the Station Instruments & Controls Subcommittee, a study has been undertaken on furnace explosions. The objective of this project is to define the causes of accidents of this nature.

M. D. Engle, Chairman of the Fuel & Ash Handling Subcommittee, advised that this group is considering suggested research subjects in the fuel and ash-handling area. In a closely related field, Mr. Mautz, Chairman of the Power Station Structures & Facilities Subcommittee, reported that this group will be prepared in the near future to inform the Committee on the results of a study of acid corrosion in reinforced concrete stacks.

In reporting on the activities of the 63-man Power Station Chemistry Subcommittee, I. B. Dick, Chairman, noted that a manual on procedure for making atmospheric surveys is being prepared. After review by the Subcommittee's editorial section, this material will be made available to members of the committee. The subcommittee's corrosion section is collecting data to attempt to correlate time to first tube failures in new boilers with loading. This section is also continuing its study of turbine nozzle block damage. The carryover section of the subcommittee is considering the relationship between "zero" boiler water treatment and carryover. Since it is not expected that "zero" solids in boiler water will have any effect on moisture in saturated steam, the effect of moisture on scaling in the superheater, and therefore ultimately on the amount of mill scale entering the turbine and resultant valve stem deposits and nozzle and blade damage, is involved.

Mr. Lind, Chairman of the Power Station Data Subcommittee, reviewed data sheets sent to the committee since the last meeting. Consideration is being given to expanding this activity to include data on atomic installations.

In the absence of W. Welch, P. H. Gravelle reported on the activities of the Station Instruments & Controls Subcommittee. This group is closely following the development of central information and automation systems being installed by a number of electric utility companies. This subcommittee has also recently undertaken studies on furnace flame detectors and boiler water level indicators.

In addition to its annual study on turbine and boiler availability, the Turbines & Condensers Subcommittee is investigating a number of research proposals associated with equipment of interest to this group. V. F. Estcourt, Chairman of the subcommittee, reported that one of the project proposals which was forwarded to the Prime Movers Committee by the Research Projects Committee involves the subject of aluminum condenser tubes. The subcommittee will consider this matter in cooperation with the Power Station Chemistry Subcommittee.

Following customary procedure, Prime Movers Committee members assigned to maintain liaison with research programs sponsored by EEI or to which the Institute has contributed on recommendation of the committee, reported on developments of these projects since the last Prime Movers Committee meeting. G. W. Bice discussed progress of the ASME high temperature steam generation project. Mr. Pasini reported for R. M. Van Duzer, EEI representative on the ASME Research Committee on Properties of Steam. R. A. Baker advised of the activities of the ASTM-ASME Joint Committee on the Effect of Temperature on the Properties of Metals and also reported on the ASME Research Committee on Corrosion & Deposits from Combustion Gases for R. I. Smith of his company, who is the EEI representative on this ASME Committee. E. H. Krieg detailed recent work on the stainless steel pipe welding failures project and the stainless steels for high temperature superheater and reheater service research program that are underway at the University of Michigan Engineering Research Institute by Dr. G. W. Freemans, metallurgical consultant, under the sponsorship of the Joint ASTM-ASME Joint Committee on the Effect of Temperature on the Properties of Metals. T. M. Hotchkiss, who with P. H. Hartung, represents the Prime Movers Committee on the Bituminous Coal Research, Inc.-EEI-AEIC Joint Research Advisory Committee, reported on the two cooperative projects which this committee is directing. These projects, involving sulphur removal from steaming coals and flue gas contaminants control, are underway at the BCR laboratories.

Avon Station Visited

During the afternoon of the second day committee members and guests inspected the supercritical unit at Avon Station.

The committee's next meeting is scheduled for May 2-4, in New Orleans.

Live Better Electrically Round-Up

(*Continued from page* 87)

Medallions meet approximately the same high standards for wiring and lighting, but the Gold also indicates electric comfort heating.

During the first 15 months of promoting Live Better Electrically Medallion Homes by Orange & Rockland Utilities, Inc., 21 builders have been certified as Medallion Home builders. The builders have committed themselves to erect 238 of these homes.

Since the promotional campaign began in 1958 for Medallion Homes, 3,127 homes served by Gulf States Utilities Co. have qualified for either a Bronze or Gold Medallion.

Electrical System and Equipment Committee Meeting

- *Electrical Features of Eddystone Station*
- *Report of Steering Committee on Research Projects*
- *Illinois-Missouri Intersystem Power Pool*

R. G. MEYERAND
Chairman

THE Electrical System and Equipment Committee held its 80th meeting at the Bellevue-Stratford Hotel in Philadelphia, Pa., Feb. 15-16, with approximately 125 members and guests attending.

Papers, Reports, Discussions

The program consisted of papers, reports, and discussions under the sponsorship of F. J. Berger, Chairman of the Subcommittee on System and Equipment Troubles; K. L. Wheeler, Chairman of the Subcommittee on Equipment and Station Design; R. M. Pennypacker, Chairman of the Subcommittee on Equipment and Station Operation and Maintenance; N. C. Storck, Chairman of the Subcommittee on System Engineering and Operation; and V. J. Hayes, Moderator of the Round Table Discussion.

On Monday morning the closed session program of the Subcommittee on System and Equipment Troubles was presented. Various system disturbances and apparatus failures were informally discussed by the committee and guests.

A round table discussion of subjects of general interest which had been submitted previously by members was held in closed session on Monday afternoon; V. J. Hayes was the moderator of this discussion period. A new method of conducting this portion of the program was tried and proved successful. Prepared discussions were submitted on selected questions that needed some amplification for adequate answers. The balance of the program consisted of statistical type questions.

On Tuesday morning, under jurisdiction of the Subcommittee on Equipment and Station Design, K. L. Wheeler sponsored two reports and a paper given by members of the committee.

A. F. Phillips of the Duquesne Light Co. presented the "Report of Task Force on Power Fuses." A task force of the Electrical System & Equipment Committee, consisting of R. A. Lamley, R. R. Peatfield and A. F. Phillips, had reviewed the ASA Subcommittee proposed standards on high voltage fuses. These suggestions will be referred back to the ASA Subcommittee for consideration to become part of the final standards.

R. R. Wagstaff presented the "Report of EEI-AEIC-NEMA Joint Committee on Power Switchgear." A study is being made by the Triple Joint Committee on new preferred ratings of power circuit breakers, short time current ratings, reclosing ratings, temperature limits transient recovery voltages, and control voltages. Working groups have reported, and their findings are being acted upon to assure that circuit breakers are manufactured and applied in the best interest of everyone concerned.

M. R. Wallin of the Union Electric Co. presented a paper prepared by R. W. Katterhenry and D. E. Shain of the same company. This paper was entitled "Operating Experience with 138-Kv and 34.5-Kv Vacuum Switches on the Union Electric System." The first vacuum interrupter switch installed on the Union Electric system was a 138-kv unit put in service in January, 1957, at the Bailey Substation. Although the switch operated successfully, moisture and corrosion problems were encountered. Since then, 34.5-kv vacuum interrupters were installed to provide switching facilities for capacitor banks. Improved design by the manufacturers is helping to eliminate the problems involved with the use of vacuum interrupter switches.

J. Q. Wray sponsored a paper by F. W. Myers of the Philadelphia Electric Co. covering "Electrical Features of Eddystone Station." Mr. Myers explained that the electrical features of the 650-mw Eddystone Station are noteworthy because of the problems created by the use of supercritical pressure turbine generators, and because of the complexities of integrating this large block of power into the existing system. Reliable and economical solutions of these and associated operating problems were given primary consideration in the execution of all phases of the project, from the planning stages through engineering, design, and construction.

The planned installation will consist of two supercritical pressure, cross-compound units, each rated 325 mw at 20 kv. Steam conditions at the throttle of the first unit will be approximately 5000 psi, 1200 F. The second unit will operate at 3500 psi, 1050 F. The high-pressure turbine generator of the first unit is designed to produce 45 percent of the power and the low pressure 55 percent. The stators and rotors of this unit are inner-cooled with hydrogen at 45 pounds pressure. The second unit generators are designed each to produce 50 percent of the power, and the stators and rotors will have conventional cooling with hydrogen at 30 pounds.

Electrical Design

The electrical design is carried out as the unit type system. The two generators of each unit are connected directly to a pair of transformers with a total nominal rating of 400 mva, and these are then connected to one of the two 132-kv bus sections. The generator leads and the transformer low-voltage ties are in isolated-phase, metal-enclosed busses. The two transformers are paralleled on both low and high voltage sides and connected through a circuit breaker to one of the 132-kv bus sections. The coolers are seperated from the transformers and mounted in two groups between the transformers, with the two groups interconnected by piping. Normally each

transformer operates with its own coolers. Should it become necessary to remove one transformer from service, manual operation of the valves will connect the coolers of this transformer to the remaining transformer to permit full nominal output of the highly efficient generation.

The magnitude of the auxiliary supply system is approximately 28 mva per unit. There are also two 5000-hp, turbine-driven, high-pressure boiler feed pumps per unit in addition to four motor-driven boiler feed pumps. Voltages selected as being most economical for the auxiliary power system were 4000, 440, and 208 Y/120 volts. Motors of above 300 hp are supplied at 4000 volts and below 300 hp at 440 volts.

Radial Unit Auxiliary Power

Each unit auxiliary power system is radial, with two transformers supplying two 4-kv busses which increase reliability over a single supply. The major auxiliary motors are connected to both 4-kv busses in order to assure continued operation in case of failure of one bus or its supply cable. Combustion control equipment, bearing oil pumps, and hydrogen seal oil pumps are automatically thrown over to other sources in the event of loss of the supply voltage.

Two station auxiliary power busses are supplied from the two 132-kv unit busses through 20,000 kva, 132/13.2/4-kv transformers. Each transformer has capacity for the station auxiliary power requirements and also for starting either of the main units. In addition, it may be used in the event of failure of one of the unit auxiliary power transformers to supply the set of unit busses affected.

In the 132-kv substation, aluminum conductors are used for all busses and taps. The supporting structures for all equipment and busses are of welded aluminum construction, having a first cost which is about the same as that of conventional copper and steel construction, but a maintenance cost which is considerably less.

As a result of extensive studies, provision to avoid instability has been included by the use of dual relay protection to clear phase faults in the shortest possible time.

An extensive transmission plan required 100 miles of new lines to distribute the 600-mw capacity from Eddystone. About two-thirds of these high-voltage lines (principally 132 kv) has been constructed on railroad rights of way. More than one-half of this will be supported on railroad electrification structures extended and modified to accommodate power transmission lines.

The high efficiency of supercritical pressure turbine generators of this size is a compelling reason to attain maximum availability, and this dictates a high degree of reliability of the electrical features. On the other hand, cost must be kept to a minimum. It is believed that the optimum balance between these two basic requirements has been achieved by stressing simplicity.

Research Projects

W. B. Fisk presented a report on the progress of the research study on direct conversion of energy to electricity, which has been initiated by EEI. The study has as its objective the evaluation of each direct conversion method for the bulk production of electricity. The results of the project are expected to provide the basis for a possible future program or plan of action by the Institute in this field. Theodore Baumeister, Steven professor of mechanical engineering, Columbia University, has been engaged to conduct the study under the direction of an EEI Steering Committee. This committee, comprised of members of the EEI Prime Movers Committee and Electrical System and Equipment Committee, has as its Chairman J. G. Miller, Metropolitan Edison Co., and includes R. A. Baker, Public Service Electric & Gas Co., W. B. Fisk, Consolidated Edison Co. of New York, Inc. and A. H. Kidder, Philadelphia Electric Co. Preliminary results from the study are expected to be available to the sponsoring groups by mid-1960.

A. E. Wilson of the Canadian-Brazilian Services, Ltd., presented a paper entitled "Review of Reports of United Kingdom Electricity Authorities." This was an interesting and informative discussion of the organization, operation, and design of various electric utilities in Great Britain.

R. M. Pennypacker, Chairman of the Subcommittee on Equipment and Station Operation and Maintenance, sponsored a report and papers for his subcommittee.

S. C. Hoover reported on the activities of the Insurance Committee Fire Protection Task Force. The Subcommittee on Generating Stations has completed its report on Coal Handling Systems, and has presented it to the Insurance Committee for their approval. It contains many suggestions for the prevention of fires in crushers, conveyors, and bunkers. Another report on fire protection practices for substations is in progress and, when completed, will be very helpful to those charged with the responsibility of substation design operation, and maintenance.

J. W. Asmann sponsored two papers, one prepared by J. E. Mulavey of The Detroit Edison Co. on "Field Circuit Resistance Testing Device." This paper stated that a convenient method has been developed for measuring the insulation resistance of generator field circuits while they are energized. Thus the condition of the insulation is determined under actual operating conditions with the field conductors subjected to rotational forces. The new method makes use of a potentiometer to balance the voltage to ground so that the true insulation resistance may be measured directly.

E. L. Schlottere of the Philadelphia Electric Co. presented the other paper, entitled "Oil Handling." He discussed the history, economics and methods of handling insulating oil. Since oil is used as an insulator, cooling agent and arc quencher, it is an important material required for the operation of high voltage power equipment. A large financial saving can be realized by exercising care in storage, handling, and testing of new and used oils; to insure against oxidation, moisture, and the inclusion of air and foreign matter which destroy dielectric and heat transfer properties.

Intersystem Power Pool

N. C. Stites sponsored a paper prepared by H. G. Goers entitled "The Illinois-Missouri Pool—Its Function, Organization, and Operation." This paper, which appears on page 78 of this issue of the EEI BULLETIN, points out that since the formation of the pool, members have been able to defer capital expenditures for generating capacity and have realized savings from the use of larger units and economy energy.

Now Available from EEI

Rural Electrification in the United States

A 47-page booklet telling the story of how electricity came to the American farm.

It is based on the records of electric companies, electrical manufacturers and farm groups all over the nation, as well as on technical and trade journals and information compiled by agencies of the Federal government.

Price: 1 to 9 copies, 90 cents each; 10 to 99 copies, 65 cents each, postpaid in USA; 100 to 499 copies, 50 cents each; 500 copies or more, 35 cents each, FOB, New York, N. Y.

A Course for Electric Company Employees in the Fundamentals of American Freedom

"American Freedom," an employee information course of demonstrated effectiveness, is being offered by the Edison Electric Institute to its member companies. Derived from authoritative sources, the facts contained in this program are carefully designed to achieve a high level of employee interest and understanding through the use of three colored film strips, an illustrated 64-page booklet, and a manual for discussion leaders.

For further information please write: Edison Electric Institute, 750 Third Avenue, New York 17, N. Y.

Edison Electric Institute, 750 Third Ave., New York 17, N. Y.

Transmission & Distribution Committee Meeting

- *EEI Publication 60-16 Completed; Replaces Q-7*
- *Report on Ground Line Treatment of Poles*
- *Experience with Oil Circuit Reclosers*

H. E. CODY
Chairman

THE winter meeting of the Transmission and Distribution Committee was held Jan. 21 and 22 at the Soreno Hotel, St. Petersburg, Fla. W. J. Clapp, President, Florida Power Corp., welcomed the 170 members and guests to St. Petersburg.

Safety

The opening session was sponsored by H. W. Dannettell, Jr., Chairman of the Safety Subcommittee.

A. J. Naquin, Chairman of the EEI Accident Prevention Committee, described activities of that committee. Important among these are analytical studies to pinpoint persistent types of accidents, development of safe practices and the preparation of visual aids to promote safe procedures and safety consciousness.

H. B. McMahan presented a safety movie, "Take Another Look," produced by the Commonwealth Edison Co.

Underground

D. F. Tulloch, Chairman of the Underground Subcommittee, sponsored a session covering a variety of subjects.

A. Gandy, Jr., told how the Potomac Electric Power Co. moved a pair of 69-kv, pipe-type cables 6.2 ft. laterally for a distance of 702 ft. to accommodate footings for a street underpass without cutting the pipes. After being uncovered, the pipes were shifted in two-ft. steps at 50-ft. intervals.

A. B. Craig announced completion of EEI Publication 60-16, "Recommended Procedure for the Diagnosis of Cable, Joint and Termination Troubles," which will replace EEI Publication Q-7. The major changes are an expansion of the detailed classification of cable troubles and application of the same classification to joint and termination troubles. The new classification will be used in the annual Cable Operation Report beginning with 1960.

H. R. Nash described conduit systems used by The Detroit Edison Co. The standard for the underground system is composed of four-in. fiber ducts encased in a monolithic, vibrated concrete envelope. Underground service for special areas such as residential subdivisions is provided in direct-buried, heavy-wall fiber duct in preference to buried cable.

H. W. Grate discussed The Cincinnati Gas & Electric Co. tests on 650-mcm, three-conductor, 15-kv cables, indicating that trouble from lead sheath fatigue within ducts will be relieved by using conductors annealed after compaction, resilient instead of metallic binders, alloyed lead sheath and neoprene or polyethylene jackets.

A report from L. G. Smith and G. P. Adams outlined progress on the AEIC-EEI extra-high-voltage cable research project. This report appeared on page 59 of the February, 1960, EEI BULLETIN.

T. C. Duncan described failure of a 138-kv, pipe-type cable joint attributed to a poor solder connection to the copper shielding tape.

V. O. Bernthal discussed two failures on a 138-kv, oil-filled cable, both due to arcing in a joint between the prong of a copper retaining strip and the shielding braid and the joint casing. The prong had not been bent down properly before completing the joint.

D. C. White outlined features of the underground residential distribution system used by the Portland General Electric Co. Primaries are single-phase, 7.2 kv, #2 copper, shielded, concentric neutral cables buried 48 inches deep along rear lot lines. Services run directly to houses from pad-mounted transformers. The builder digs and backfills the service trench and pays the excess cost above that for an overhead system.

Standards and Specifications

H. G. Hally, Chairman of the Standards and Specifications Subcommittee, called on task force chairmen for progress reports.

W. H. Johnson announced the issue of EEI Publication 59-74 "Methods for Inspection of Standing Wood Poles in Overhead Lines." The proposed "Guide for Reuse of Poles" also has received a favorable letter ballot and is soon to be released for publication. A proposed revision of TD-90, "Specifications for Douglas Fir Crossarms, Treated or Untreated," has been submitted to members for ballot.

C. E. Topping reported a favorable ballot on proposed revision of specifications for spool type secondary racks. The EEI-NEMA Joint Committee on Pole Line Hardware also is making progress on proposed new specifications for insulated clevises, secondary extension brackets and aerial cable hangers, as well as revisions of a number of existing specifications.

C. E. Bingham stated that a proposed application guide for automatic circuit reclosers is about ready to be sent to members for ballot.

F. G. Josberger reported that the new EEI-IPCEA Joint Committee on Standardization of Aluminum Overhead Service Cable already is making good progress toward development of proposed standards for two types of #4 triplex cable.

H. MacVaugh reported that a two-year, proof-testing program to confirm proposed methods of providing for interchangeability of aluminum conductor compression connector tools and fittings has been approved.

Reporting for A. T. Green, E. T. Coupal announced that the EEI-NEMA Joint Committee on Standardization of Street Lighting Equipment has drafted a proposed supplement to

the existing standards for street lighting poles and proposed new standards for light sensitive control devices which are being sent to members for ballot. Revision of the existing standards for filament lamps also is under study.

Overhead

R. Hicock, Chairman of the Overhead Subcommittee, sponsored a session featuring a symposium on ground line treatment of standing poles.

D. A. Campbell, Jr., reported that the Pennsylvania Power & Light Co. has applied 924,000 ground line treatments to 220,000 chestnut, cedar and ZMA-treated pine poles since 1936. Since 1950, treatments of sodium fluoride, dinitrophenol and potassium bichromate in a coal tar and creosote vehicle and sodium pentachlorophenate in a coal tar and water emulsion have been used about equally. The treating cycle recently has been extended from five to seven years.

R. G. Steiner outlined an economic study of supplemental treatment of standing poles conducted by the Union Electric Co. Based on first treatment at the 18th year and subsequent treatments at eight-year intervals, the cost of treatment is estimated to be only about 25 per cent of the value returned in extended life.

W. H. Johnson noted that the economies of ground line treatment of cedar poles are firmly established but that more experience is needed to evaluate the benefits for Southern pine poles since present treatments do not completely penetrate all of the thick sapwood. He also emphasized that pole mortality varies considerably with climatic conditions and that each company should base its treatment program on its own inspection records.

A. B. Weaver presented a movie showing Central Power & Light Co. ground line treatment procedures.

W. L. Carey reported that Portland General Electric Co. experience with oil circuit reclosers on 12.5-kv distribution circuits has established their value as the only available means of providing the desired degree of service reliability at reasonable cost. However, their value as cheaper substitutes for substation feeder breakers is considered questionable.

H. C. Bingham described The Cleveland Electric Illuminating Co.'s program for checking, maintaining and testing oil circuit reclosers. Those on lines are serviced after 100 operations, or every three years, and those at substations every two years. Time-current characteristics are checked on both new and serviced reclosers.

D. A. Campbell, Jr. outlined Mutual Assistance Task Force plans to develop information helpful to companies sending or receiving aid and plans to improve the efficiency of the storm tracking network established among companies in the eastern area.

R. Hicock reviewed progress of the research project on tree growth control. Screening of chemical compounds still is continuing, but two of the most promising have been earmarked for further investigation.

General Engineering

The closing session was sponsored by C. E. Bathe, Chairman of the General Engineering Subcommittee.

H. L. Davis, Jr. reviewed activities of the Federal Communications Commission affecting power company use of radio. Reallocation of all frequencies above 25 mc are in various stages of consideration.

M. L. Ernst summarized activities of the American Right of Way Association in promoting effective liaison between utilities and state and national highway agencies to establish uniform procedures and facilitate advance planning with minimum conflict.

M. C. Westrate reported on current projects of the System Planning Subcommittee of the Electrical System and Equipment Committee.

A. P. Pfeifer described The Detroit Edison Co.'s arrangements for joint use of poles with the telephone company. One unusual aspect is a brief formal agreement which includes only basic policy and procedure and vests authority for details with a Joint Use Committee which keeps specifications, rental rates and procedures up to date. Another is a sampling procedure for determining the number of joint use poles which has reduced administration costs substantially.

R. Hicock gave details of the cadet engineer training program of The Connecticut Light & Power Co. This paper appears on page 74 of this issue of the EEI BULLETIN.

C. R. Bond presented a movie showing physical tests on the design to be used for Ohio Edison Co.'s 345-kv transmission lines. The lines are single circuit with bundled conductors and utilize a new narrow base tower design.

The remainder of the meeting was devoted to general discussion of members' specific problems.

Utility Motor Vehicle Conference Scheduled May 9-12

THE 19th Joint Conference on the Operation of Public Utility Motor Vehicles will be held at the Jung Hotel in New Orleans, La., May 9-12. The conference is sponsored by the EEI Transportation Committee and the American Gas Association's Automotive and Mobile Equipment Committee.

W. B. Streitle, Assistant Superintendent of the Transportation Department of Rochester Gas and Electric Corp., is Chairman of the EEI Transportation Committee.

Some of the subjects to be discussed are:

"Tools and Instruments for Preventive Maintenance," "Transistor Radios and Effect on Battery and Generator Capacity," "Diesel Passenger Car Engines," "LPG Fuel for Cars and Trucks," "New Equipment at Work," "Training and Qualification of Mechanics," "Automotive Paint Finishes," "Oilite Bearings and Joints," "Compact Cars."

Also, "New Aerial Equipment," "Training of Operators for Special Equipment," and "Body and Equipment Design for Three- and Four-Man Crews."

On the final day of the conference, there will be a report by the Subcommittee on Vehicle Selection, Utilization and Retirement. In addition, an open discussion will cover body corrosion, safety features, mufflers and exhaust systems, and tire and wheel sizes. Another discussion will be devoted to employment practices.

This conference will be held in conjunction with the AGA Combined Distribution Transmission Conference.

People in Power

J. F. BONNER has been elected Vice President in Charge of Engineering, and E. H. FISHER was named Vice President in Charge of Gas Operations, Pacific Gas and Electric Co.

Mr. Bonner had been assistant to WALTER DREYER, retired, whom he replaces. He joined PG&E in 1937 as an assistant hydrographer, after serving with the U. S. Forest Service, Alcoa Ltd., the U. S. Corps of Engineers and Western Gold Inc. Mr. Fisher joined the company in 1954.

Mr. Dreyer had served with the utility for 43 years. He became chief engineer in 1944 and was elected vice president and chief engineer in 1952.

R. W. HELLER has been elected Vice President of Duquesne Light Co., succeeding G. W. OUSLER.

In his capacity as Vice President, Mr. Heller will be responsible to the Chairman of the Board and President for all activities of the Sales Division.

Mr. Heller attended the University of Maryland, from which he received a bachelor of science degree in 1921, and later an electrical engineering degree. From 1922 to 1924, he was employed by Westinghouse Electric Corp., working in the central engineering department at East Pittsburgh. He joined Duquesne Light in 1924 as a power sales engineer and has since served as supervisor of industrial sales and director of industrial sales. He became manager of residential sales in 1950.

Mr. Heller is a member of the Pennsylvania Electric Association, Engineers Society of Western Pennsylvania, Electric League of Western Pennsylvania, Pittsburgh Chamber of Commerce and Oakmont Chamber of Commerce.

Appointment of G. W. OUSLER, retiring Vice President — Sales, Duquesne Light Co., as an executive of Edwin L. Wiegand Co., manufacturer, of electrical heating equipment, has been announced by E. N. Calhoun, Wiegand President.

Mr. Ousler will become Assistant to the President, with the principal assignment of coordinating Wiegand's electric heating program with those of electric utilities throughout the country. He succeds P. H. MCCANCE, who recently became Director of The Buhl Foundation.

Mr. Ousler has been active in state and national utility affairs. He has been a member of the Sales Division Executive Committee of EEI for many years and is past chairman of this group. For the past two years he has been chairman of the Live Better Electrically Policy Committee, which is responsible for directing and administrating the national Live Better Electrically program sponsored by the Institute. He is also past president of the Pennsylvania Electric Association and has been on its executive committee for several years.

J. R. HARTMAN, Vice President, The Cincinnati Gas & Electric Co., has been given expanded duties with the company. He will assume responsibility for the following departments: community relations, electric sales, customer service, advertising and media services, and sales promotion. Assignment of R. W. NEEL to the position of manager of the electric sales department also was announced.

A graduate of the University of Cincinnati's College of Engineering, Mr. Hartman has been a CG&E vice president since 1946. He is one of Greater Cincinnati's most active civic leaders. His work on a national level in the electrical field also is well known.

He is a member of the EEI Sales Division Executive Committee; National Committee, National Electrical Week; various committees in the Illuminating Engineering Society, and president, Cincinnati Electrical Association; member of Civic Affairs Committee, Engineering Society of Cincinnati, and other civic, service and church groups.

H. E. BROWN, Division Manager of Gulf States Utilities Co. in Baton Rouge, has been elected a Vice President of the utility. An electrical engineer, Mr. Brown began his utility career with the Tampa Electric Co. in 1925. He joined Gulf States in 1937 as superintendent of distribution in Navasota, Texas. He was promoted to operating superintendent of the Lake Charles division in 1942 and in 1953 was transferred to Beaumont as system operations manager.

R. W. BRITT, Special Assistant to the Vice President and Controller, Wisconsin Electric Power Co., has been appointed Assistant Controller of the company. Mr. Britt has served as Chairman of the EEI Electronic Accounting Machine Developments Committee.

He received electrical engineering and accounting degrees from the University of Wisconsin. He joined Wisconsin Electric Power in 1948 as a development man, and in 1949 was promoted to senior development man. In 1955, he became first assistant auditor of customers accounts and a year later auditor of customers accounts.

CARL E. ASBURY has been appointed chief electrical engineer of Commonwealth Associates Inc. He was formerly supervisor of Commonwealth's Electrical Application Section. Mr. Asbury is a member of several American Institute of Electrical Engineers technical committees, and he is now chairman of the Low Voltage Air Circuit Breaker Subcommittee. He served as U. S. delegate to the International Electrotechnical Commission meetings in 1958 and 1959. He has been with the Commonwealth organization since 1946, and was formerly with Illinois Power Co.

M. C. WESTRATE, formerly Commonwealth's Chief Electrical Engineer, has been appointed Chief Systems Engineer, and J. A. ELZI, formerly Chief Systems Engineer, has assumed the duties of Coordination Engineer.

Promotion of H. J. WEST to Special Assistant to the Vice President, Engineering, has been announced by Pennsylvania Power & Light Co. In his new position, he will head up PP&L's studies and information activities in connection with development of Delaware River Basin water resources. He had been station electrical engineer.

Succeeding Mr. West is PAUL HOLTZ, substation engineer. He will be in charge of PP&L's generating stations, substations, relay and control, and research and development for the electrical engineering division.

Mr. West joined PP&L in 1934, after being graduated from Pennsylvania State University with a de-

Lindseth Speech Cited by Freedoms Foundation

A GEORGE WASHINGTON Honor Medal Award was presented to Elmer L. Lindseth, President of The Cleveland Electric Illuminating Co., and Chairman of the EEI Committee on Atomic Power, it has been announced by the Freedoms Foundation, Valley Forge, Pa. The award was made to Mr. Lindseth for his public address, "The Vanishing American."

The national award, presented on George Washington's birthday, described Mr. Lindseth's speech as "an outstanding achievement in helping to bring about a better understanding of the American Way of Life during 1959."

The address was presented January 29, 1959, at the Statler-Hilton Hotel before the Rotary Club of Cleveland.

"The Vanishing American" deals specifically with the alarming growth of improper government participation in business. The talk raises—and answers—a disturbing question: are we as free as we think we are?

Reprinted in the *Congressional Record*, the talk has been distributed in booklet form by the tens of thousands, re-presented as an address before a variety of audiences, reprinted in a number of magazines and quoted in newspapers.

The Freedoms Foundation award is the second for an Illuminating Company speaker. Ralph M. Besse, Executive Vice President of the company, was honored in 1951 for an address, "What Can One Man Do?"

---

gree in electrical engineering.

After a series of promotions he became assistant station electrical engineer in 1957, and shortly after that moved up to his most recent position, station electrical engineer.

R. E. HODGES, Assistant General Manager of Appalachian Power Co., has been elected Vice President and General Manager of the company. He succeeds G. L. FURR who retired Feb. 1 after 43 years with the company.

Mr. Hodges has been associated with Appalachian and Kentucky Power Co. since 1926, following his graduation from West Virginia University. He served in a number of engineering and administrative positions before being named assistant general manager of Kentucky Power in 1940. He became general manager of that company in 1943. Five years later he was appointed Charleston division manager, and in 1954 moved to Roanoke as assistant general manager of Appalachian. He is a past president of the Public Utilities Association of the Virginias, a member of the American Institute of Electrical Engineers, and a member of the West Virginia Society of Professional Engineers.

Mr. Furr joined the company in 1916 after his graduation from Virginia Polytechnic Institute. He came to Roanoke in 1946 as assistant general manager of the company. He had served as vice president and general manager since 1952.

G. T. SANDERS, Manager of the Merchandise Sales Department, has been named to the newly-created post of Manager of Customer Marketing Services for The Potomac Edison Co. J. W. GEOGHEGAN, Sales Training and Sales Promotion Supervisor, succeeds Mr. Sanders as Manager of Merchandise Sales.

In his new capacity, Mr. Sanders will continue to supervise the company's over-all merchandising activities. In addition, he will assume the supervision of commercial marketing activities, and residential and farm promotional programs.

A veteran of over 25 years of service with PE, Mr. Sanders has spent the last eight years as manager of the company's merchandise department. His entire working career with PE has been spent in sales activities.

Mr. Geoghegan has had 14 years experience with PE, all in the merchandise department.

J. L. RICE, JR., President of The West Penn Electric Co., has been designated chief executive officer of the company.

The announcement was made by Earle S. Thompson, Chairman of the Board of WPE, who held the post of chief executive officer prior to Mr. Rice's appointment. Mr. Thompson continues to serve as Chairman of the Board.

Mr. Rice was elected President and designated chief administrative officer in 1957. He had been treasurer of the West Penn Electric Co. and its predecessor company, the American Water Works and Electric Co., since 1945.

Mr. Rice also serves as a member of the Board of Directors and the Executive Committee of The Potomac Edison Co.

Committee on International Cooperation Formed by EEI

THE EEI Committee on International Cooperation is the newest committee authorized by the Institute's Board of Directors and appointed by President Allen S. King.

The committee is under the Chairmanship of R. G. Rincliffe, President, Philadelphia Electric Co. Its objective is to maintain general contact with the State Department and with foreign groups who visit the United States on power supply matters.

Serving with Mr. Rincliffe on the committee are: W. L. Cisler, President, The Detroit Edison Co.; J. E. Corette, President, The Montana Power Co.; C. E. Eble, President, Consolidated Edison Co. of New York, Inc.; D. S. Kennedy, Chairman and President, Oklahoma Gas and Electric Co.; E. L. Lindseth, President, The Cleveland Electric Illuminating Co., and N. R. Sutherland, President Pacific Gas and Electric Co.

The Committee on International Cooperation works closely with the Committee on Technical Exchange for Overseas Visitors, which is under the Chairmanship of H. E. Bumgardner, The Detroit Edison Co.

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

OFFICERS

ALLEN S. KING, *President*.....Northern States Power Co., Minneapolis, Minn.
SHERMAN R. KNAPP, *Vice President*.....The Connecticut Light & Power Co., Berlin, Conn.
EDWIN VENNARD, *Vice President and Managing Director*.....750 Third Ave., New York, N. Y.
H. S. SUTTON, *Treasurer*.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
A. B. MORGAN, *Secretary and Assistant Managing Director*.....750 Third Ave., New York, N. Y.

BOARD OF DIRECTORS

(Terms expiring 1960)

W. C. BECKJORD, The Cincinnati Gas & Electric Co.
W. C. BELL, The United Illuminating Co.
J. F. DAVENPORT, Southern California Edison Co.
T. W. DELZELL, Portland General Electric Co.
G. S. DINWIDDIE, New Orleans Public Service Inc.
WILLIS GALE, Commonwealth Edison Co.
M. L. KAPP, Interstate Power Co.
W. T. LUCKING, Arizona Public Service Co.
W. W. LYNCH, Texas Power & Light Co.
L. C. MCCLURKIN, Savannah Electric and Power Co.
J. J. MCDONOUGH, Georgia Power Co.
W. B. MCGUIRE, JR., Duke Power Co.
A. R. SCHILLER, Public Service Co. of New Hampshire
G. W. VAN DERZEE, Wisconsin Electric Power Co.
J. T. WOLFE, Baltimore Gas and Electric Co.

(Terms expiring 1961)

J. K. BUSBY, Pennsylvania Power & Light Co.
D. C. COOK, American Electric Power Co., Inc.
E. W. DOEBLER, Long Island Lighting Co.
R. R. DUNN, Potomac Electric Power Co.
C. E. EBLE, Consolidated Edison Co. of New York, Inc.
F. I. FAIRMAN, Kentucky Utilities Co.
P. A. FLEGER, Duquesne Light Co.
D. E. KARN, Consumers Power Co.
D. S. KENNEDY, Oklahoma Gas and Electric Co.
E. D. SHERWIN, San Diego Gas & Electric Co.
N. R. SUTHERLAND, Pacific Gas and Electric Co.
L. V. SUTTON, Carolina Power & Light Co.
W. F. TAIT, JR., Public Service Electric and Gas Co.
WILLIAM WEBSTER, New England Electric System
C. H. WHITMORE, Iowa-Illinois Gas and Electric Co.

(Terms expiring 1962)

E. R. ACKER, Central Hudson Gas & Electric Corp.
W. L. CISLER, The Detroit Edison Co.
J. E. CORETTE, The Montana Power Co.
G. W. EVANS, Kansas Gas and Electric Co.
O. T. FITZWATER, Indianapolis Power & Light Co.
R. A. GIBSON, The Hartford Electric Light Co.
R. E. GINNA, Rochester Gas and Electric Corp.
E. L. LINDSETH, The Cleveland Electric Illuminating Co.
J. W. MCAFEE, Union Electric Co.
H. M. MILLER, Columbus and Southern Ohio Electric Co.
E. M. NAUGHTON, Utah Power & Light Co.
J. L. RICE, JR., The West Penn Electric Co.
H. P. TAYLOR, Wisconsin Public Service Corp.
O. TITUS, Metropolitan Edison Co.
D. J. TUEPKER, Public Service Co. of Oklahoma

ADVISORY COMMITTEE

A. D. BARNEY, The Hartford Electric Light Co.
J. B. BLACK, Pacific Gas and Electric Co.
HARLLEE BRANCH, JR., The Southern Co.
H. J. CADWELL, Western Massachusetts Electric Co.
C. P. CRANE, Baltimore Gas and Electric Co.
C. B. DELAFIELD, Consolidated Edison Co. of N. Y., Inc.
T. G. DIGNAN, Boston Edison Co.
E. H. DIXON, Middle South Utilities, Inc.
G. M. GADSBY, Utah Power & Light Co.
D. C. LUCE, Public Service Electric and Gas Co.
G. L. MACGREGOR, Texas Utilities Co.
E. J. MACHOLD, Niagara Mohawk Power Corp.
P. B. MCKEE, Pacific Power & Light Co.
I. L. MOORE, New England Electric System
G. C. NEFF, Wisconsin Power and Light Co.
C. E. OAKES, Pennsylvania Power & Light Co.
J. S. OSBORNE, Central & South West Corp.
HAROLD QUINTON, Southern California Edison Co.
R. G. RINCLIFFE, Philadelphia Electric Co.
K. M. ROBINSON, The Washington Water Power Co.
W. H. SAMMIS, Ohio Edison Co.
MCGREGOR SMITH, Florida Power & Light Co.
PHILIP SPORN, American Electric Power Co., Inc.
F. M. TAIT, The Dayton Power and Light Co.
J. B. THOMAS, Texas Electric Service Co.
E. S. THOMPSON, The West Penn Electric Co.
ALLEN VAN WYCK, Illinois Power Co.

EXECUTIVE COMMITTEE

E. R. Acker, C. E. Eble, Willis Gale, E. L. Lindseth, W. W. Lynch, J. W. McAfee, N. R. Sutherland, L. V. Sutton, G. W. Van Derzee

CHAIRMEN OF EDISON ELECTRIC INSTITUTE COMMITTEES

COMMITTEES OF THE BOARD OF DIRECTORS

Atomic Power, E. L. LINDSETH.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
International Cooperation, R. G. RINCLIFFE.....Philadelphia Electric Co.
Management Practices, S. L. DRUMM.....West Penn Power Co., Greensburg, Pa.
Membership, E. S. THOMPSON.....The West Penn Electric Co., New York, N. Y.
Policy on Power & Pooling, C. E. OAKES.....Pennsylvania Power & Light Co., Allentown, Pa.
Regulation, C. E. KOHLHEPP.....Jersey Central Power & Light Co., Denville, N. J.
Relations with Educational Institutions, S. R. KNAPP.....The Connecticut Light & Power Co., Berlin, Conn.
Rural Electrification, W. W. LYNCH.....Texas Power & Light Co. Dallas, Texas
Special Tax Policy, D. S. KENNEDY.....Oklahoma Gas and Electric Co., Oklahoma City, Okla.
Technical Appraisal Task Force on Nuclear Power, J. F. FAIRMAN..Consolidated Edison Co. of N. Y., Inc., New York, N. Y.

CHAIRMEN OF EDISON ELECTRIC INSTITUTE COMMITTEES

(Continued)

ACCOUNTING DIVISION

Accounting Division Executive, P. R. LAWSON.....Pennsylvania Electric Co., Johnstown, Pa.
Coordinator of Customer Activities Group, D. M. ARNOLD.....Pennsylvania Power Co., New Castle, Pa.
Accounting Division Customer Relations, J. B. WHITE, JR.....Duquesne Light Co., Pittsburgh, Pa.
Customer Accounting, R. G. MAAS.....Wisconsin Electric Power Co., Milwaukee, Wis.
Customer Collections, M. G. WUEST.....The Cincinnati Gas & Electric Co., Cincinnati, Ohio
Coordinator of General Activities Group, G. A. BROWNMILLER.....The Connecticut Light & Power Co., Berlin, Conn.
Depreciation Accounting, C. D. DAVIS.....The Detroit Edison Co., Detroit, Mich.
General Accounting, M. J. DOAN.....The Cincinnati Gas & Electric Co., Cincinnati, Ohio
Internal Auditing, R. W. BRIGGS.....Virginia Electric and Power Co., Richmond, Va.
Plant Accounting and Property Records, P. D. JOHNSON.....Consolidated Edison Co. of New York, Inc.
Taxation Accounting, A. G. MAIHOFER.....The Detroit Edison Co., Detroit, Mich.
Coordinator of Special Activities Group, W. T. HAMILTON.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
Accounting Employee Relations, W. E. GRINTER.....Consumers Power Co., Jackson, Mich.
Application of Accounting Principles, W. G. CHRISTIE.....General Public Utilities Corp., New York, N. Y.
Electronic Accounting Machine Developments, R. E. HARBAUGH.....Philadelphia Electric Co., Philadelphia, Pa.
Methods and Procedures, J. P. WILLIAMSON.....The Toledo Edison Co., Toledo, Ohio
Uniform System of Accounts, E. H. HEGMANN.....Duquesne Light Co., Pittsburgh, Pa.

CUSTOMER, EMPLOYEE AND INVESTOR RELATIONS DIVISION

Customer, Employee and Investor Relations Executive, C. E. OAKES.....Pennsylvania Power & Light Co., Allentown, Pa.
Customer Relations, KIMBALL JACK.....The Washington Water Power Co., Spokane, Wash.
Industrial Relations, W. H. SENYARD.....Louisiana Power & Light Co., New Orleans, La.
Investor Relations, W. H. ZIMMER.....The Cincinnati Gas & Electric Co., Cincinnati, Ohio

ENGINEERING DIVISION

Engineering & Operating Division Executive, W. L. CHADWICK.....Southern California Edison Co., Los Angeles, Calif.
Electrical System & Equipment, R. G. MEYERAND.....Union Electric Co., St. Louis, Mo.
Hydraulic Power, K. O. STRENGE.....The Washington Water Power Co., Spokane, Wash.
Meter & Service, C. P. STAHL.....Wisconsin Power and Light Co., Madison, Wis.
Prime Movers, T. O. THOMPSON.....Wisconsin Electric Power Co., Milwaukee, Wis.
Transmission & Distribution, H. E. CODY.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
Transportation, W. B. STREITLE.....Rochester Gas and Electric Corp., Rochester, N. Y.

GENERAL DIVISION

General Division Executive, P. A. FLEGER.....Duquesne Light Co., Pittsburgh, Pa.
Accident Prevention, A. J. NAQUIN.....New Orleans Public Service Inc., New Orleans, La.
Awards, A. M. WADE.....The Connecticut Light & Power Co., Berlin, Conn.
Electric Power Survey, A. S. GRISWOLD.....The Detroit Edison Co., Detroit, Mich.
Insurance, R. R. MACKAY, JR.....Philadelphia Electric Co., Philadelphia, Pa.
Legal, D. K. KADANE.....Long Island Lighting Co., Mineola, N. Y.
Purchasing and Stores, H. T. SIMPSON.....Boston Edison Co., Boston, Mass.
Rate Research, K. W. HASBROUCK.....New York State Electric & Gas Corp., Ithaca, N. Y.
Research Projects, E. L. HOUGH.....Union Electric Co., St. Louis, Mo.
Statistical, J. L. KENNEDY.....Rochester Gas and Electric Corp., Rochester, N. Y.
Technical Exchange for Overseas Visitors, HARVEY BUMGARDNER.....The Detroit Edison Co., Detroit, Mich.

SALES DIVISION

Sales Division Executive, E. O. GEORGE.....The Detroit Edison Co., Detroit, Mich.
Commercial Group, L. T. CALE.....Alabama Power Co., Birmingham, Ala.
Commercial Cooking & Water Heating, J. L. BEAVER.....Metropolitan Edison Co., Reading, Pa.
Commercial Lighting, G. J. GILLEN.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
Electric Space Heating & Air Conditioning, L. E. BLADES.....Arkansas Power & Light Co., Little Rock, Ark.
Street and Highway Lighting, L. H. LINGEMANN.....Duquesne Light Co., Pittsburgh, Pa.
Farm Group, P. R. SCHEPERS.....Consumers Power Co., Jackson, Mich.
Farm Development, L. T. WANSLEY.....Georgia Power Co., Atlanta, Ga.
Farm Promotion, VIRGIL MARVIN.....The Toledo Edison Co., Toledo, Ohio
Industrial Power & Heating Group, P. W. MCCORMICK.....Union Electric Co., St. Louis, Mo.
Competitive Service, R. W. BASCHNAGEL.....Rochester Gas and Electric Corp., Rochester, N. Y.
General Power & Heating, J. H. AHRENS.....The Hartford Electric Light Co., Hartford, Conn.
Industrial Sales Methods & Development, A. D. SPILLMAN.....Philadelphia Electric Co., Philadelphia, Pa.
Residential Group, R. G. MACDONALD.....West Penn Power Co., Greensburg, Pa.
Home Service, JUDITH O'FLAHERTY.....Philadelphia Electric Co., Philadelphia, Pa.
Residential Appliance Promotion, E. J. HURLEY.....The Detroit Edison Co., Detroit, Mich.
Residential Electric Heating & Air Conditioning, J. H. K. SHANNAHAN, American Electric Power Service Corp., New York, N.Y.
Residential Lighting Promotion, J. R. WATERS.....Monongahela Power Co., Fairmont, W. Va.
Residential Wiring Promotion, J. R. FURBER.....Northern States Power Co., Minneapolis, Minn.
Advertising, W. E. PIERCE.....Commonwealth Edison Co., Chicago, Ill.
Area Development, R. P. LEE.....The Connecticut Light & Power Co., Berlin, Conn.
Electrical Living Policy, G. W. OUSLER.....Duquesne Light Co., Pittsburgh, Pa.
Market Research, C. W. MEYTROTT.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
Sales Personnel & Training, G. J. STEFFEN.....Union Electric Co., St. Louis, Mo.

, Pa.
, Pa.
, Pa.
Wis.
Ohio
Conn.
Mich.
Ohio
, Va.
, Inc.
Mich.
Ohio
Mich.
N. Y.
, Pa.
Ohio
, Pa.

, Pa.
Wash.
, La.
Ohio

Calif.
, Mo.
Wash.
Wis.
Ohio
N. Y.

Pa.
La.
Conn.
Mich.
Pa.
N. Y.
Mass.
N. Y.
Mo.
N. Y.
Mich.

Mich.
Ala.
Pa.
. Y.
Ark.
Pa.
Mich.
Ga.
Ohio
Mo.
. Y.
onn.
Pa.
Pa.
Pa.
Mich.
N.Y.
Va.
inn.
Ill.
onn.
Pa.
. Y.
Mo.

X